



***Flow Works* is aligned to the Science TEKS for Kindergarten through Grade 6.**

**Science, Kindergarten**

(1) **Scientific investigation and reasoning.** The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate and responsible practices. The student is expected to:

(A) identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately

(B) discuss the importance of safe practices to keep self and others safe and healthy

(C) demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reusing or recycling paper, plastic, and metal

(2) **Scientific investigation and reasoning.** The student develops abilities to ask questions and seek answers in classroom and outdoor investigations. The student is expected to:

(A) ask questions about organisms, objects, and events observed in the natural world

(B) plan and conduct simple descriptive investigations such as ways objects move

(E) communicate observations with others about simple descriptive investigations

(3) **Scientific investigation and reasoning.** The student knows that information and critical thinking are used in scientific problem solving. The student is expected to:

(A) identify and explain a problem such as the impact of littering on the playground and propose a solution in his/her own words

(B) make predictions based on observable patterns in nature such as the shapes of leaves

(C) explore that scientists investigate different things in the natural world and use tools to help in their investigations

(4) **Scientific investigation and reasoning.** The student uses age-appropriate tools and models to investigate the natural world.

(5) **Matter and energy.** The student knows that objects have properties and patterns. The student is expected to:

(A) observe and record properties of objects, including relative size and mass, such as bigger or smaller and heavier or lighter, shape, color, and texture

(6) **Force, motion, and energy.** The student knows that energy, force, and motion are related and are a part of their everyday life. The student is expected to:

(A) use the five senses to explore different forms of energy such as light, heat, and sound

(C) observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside

(D) observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow

(7) **Earth and space.** The student knows that the natural world includes earth materials. The student is expected to:

(B) observe and describe physical properties of natural sources of water, including color and clarity

(C) give examples of ways rocks, soil, and water are useful

## **Science, Grade 1**

(1) **Scientific investigation and reasoning.** The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate and responsible practices. The student is expected to:

(A) recognize and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately

(B) recognize the importance of safe practices to keep self and others safe and healthy

(C) identify and learn how to use natural resources and materials, including conservation and reuse or recycling of paper, plastic, and metals

(2) **Scientific investigation and reasoning.** The student develops abilities to ask questions and seek answers in classroom and outdoor investigations. The student is expected to:

(A) ask questions about organisms, objects, and events observed in the natural world

(B) plan and conduct simple descriptive investigations such as ways objects move

(E) communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations

(3) **Scientific investigation and reasoning.** The student knows that information and critical thinking are used in scientific problem solving. The student is expected to:

(A) identify and explain a problem such as finding a home for a classroom pet and propose a solution in his/her own words

(B) make predictions based on observable patterns

(C) describe what scientists do

(5) **Matter and energy.** The student knows that objects have properties and patterns. The student is expected to:

(A) classify objects by observable properties of the materials from which they are made such as larger and smaller, heavier and lighter, shape, color, and texture

(6) **Force, motion, and energy.** The student knows that force, motion, and energy are related and are a part of everyday life. The student is expected to:

(C) describe the change in the location of an object such as closer to, nearer to, and farther from

(D) demonstrate and record the ways that objects can move such as in a straight line, zig zag, up and down, back and forth, round and round, and fast and slow

(7) **Earth and space.** The student knows that the natural world includes rocks, soil, and water that can be observed in cycles, patterns, and systems. The student is expected to:

(B) identify and describe a variety of natural sources of water, including streams, lakes, and oceans

(C) gather evidence of how rocks, soil, and water help to make useful products

## **Science, Grade 2**

(1) **Scientific investigation and reasoning.** The student conducts classroom and outdoor investigations following home and school safety procedures. The student is expected to:

(A) identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately

(B) describe the importance of safe practices

(C) identify and demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reuse or recycling of paper, plastic, and metal

(2) **Scientific investigation and reasoning.** The student develops abilities necessary to do scientific inquiry in classroom and outdoor investigations. The student is expected to:

(A) ask questions about organisms, objects, and events during observations and investigations

(B) plan and conduct descriptive investigations such as how organisms grow

(E) communicate observations and justify explanations using student-generated data from simple descriptive investigations

(F) compare results of investigations with what students and scientists know about the world

(3) **Scientific investigation and reasoning.** The student knows that information and critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions. The student is expected to:

(A) identify and explain a problem in his/her own words and propose a task and solution for the problem such as lack of water in a habitat

(B) make predictions based on observable patterns

(C) identify what a scientist is and explore what different scientists do

(4) **Scientific investigation and reasoning.** The student uses age-appropriate tools and models to investigate the natural world. The student is expected to:

(B) measure and compare organisms and objects using non-standard units that approximate metric units

(5) **Matter and energy.** The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used. The student is expected to:

(A) classify matter by physical properties, including shape, relative mass, relative temperature, texture, flexibility, and whether material is a solid or liquid

(D) combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties

(6) **Force, motion, and energy.** The student knows that forces cause change and energy exists in many forms. The student is expected to:

(C) trace the changes in the position of an object over time such as a cup rolling on the floor and a car rolling down a ramp

(D) compare patterns of movement of objects such as sliding, rolling, and spinning

## Science, Grade 3

(1) **Scientific investigation and reasoning.** The student conducts classroom and outdoor investigations following school and home safety procedures and environmentally appropriate practices. The student is expected to:

(A) demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat

(B) make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics

(2) **Scientific investigation and reasoning.** The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to:

(A) plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world

(D) analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations

(E) demonstrate that repeated investigations may increase the reliability of results

(F) communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion

(3) **Scientific investigation and reasoning.** The student knows that information, critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student

(C) represent the natural world using models such as volcanoes or Sun, Earth, and Moon system and identify their limitations, including size, properties, and materials

(4) **Scientific investigation and reasoning.** The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:

(A) collect, record, and analyze information using tools, including microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, compasses, magnets, collecting nets, notebooks, sound recorders, and Sun, Earth, and Moon system models; timing devices, including clocks

and stopwatches; and materials to support observation of habitats of organisms such as terrariums and aquariums

(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:

(A) measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float

(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) **Force, motion, and energy.** The student knows that forces cause change and that energy exists in many forms. The student is expected to:

(A) explore different forms of energy, including mechanical, light, sound, and heat/thermal in everyday life

(B) demonstrate and observe how position and motion can be changed by pushing and pulling objects to show work being done such as swings, balls, pulleys, and wagons

(C) observe forces such as magnetism and gravity acting on objects

(7) **Earth and space.** The student knows that Earth consists of natural resources and its surface is constantly changing. The student is expected to:

(C) identify and compare different landforms, including mountains, hills, valleys, and plains

#### **Science, Grade 4**

(1) **Scientific investigation and reasoning.** The student conducts classroom and outdoor investigations, following home and school safety procedures and environmentally appropriate and ethical practices. The student is expected to:

(A) demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations

(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

(2) **Scientific investigation and reasoning.** The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to:

(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

(D) analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured

(E) perform repeated investigations to increase the reliability of results

(F) communicate valid, oral, and written results supported by data

(3) **Scientific investigation and reasoning.** The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student

(C) represent the natural world using models such as rivers, stream tables, or fossils and identify their limitations, including accuracy and size

(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:

(A) collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, mirrors, spring scales, pan balances, triple beam balances, graduated cylinders, beakers, hot plates, meter sticks, compasses, magnets, collecting nets, and notebooks; timing devices, including clocks and stopwatches; and materials to support observation of habitats of organisms such as terrariums and aquariums

(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:

(A) measure, compare, and contrast physical properties of matter, including size, mass, volume, states (solid, liquid, gas), temperature, magnetism, and the ability to sink or float

(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:

(D) design an experiment to test the effect of force on an object such as a push or a pull, gravity, friction, or magnetism

(7) **Earth and space.** The students know that Earth consists of useful resources and its surface is constantly changing. The student is expected to:

(B) observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice

(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

## **Science, Grade 5**

(1) **Scientific investigation and reasoning.** The student conducts classroom and outdoor investigations following home and school safety procedures and environmentally appropriate and ethical practices. The student is expected to:

(A) demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations

(B) make informed choices in the conservation, disposal, and recycling of materials

(2) **Scientific investigation and reasoning.** The student uses scientific methods during laboratory and outdoor investigations. The student is expected to:

(A) describe, plan, and implement simple experimental investigations testing one variable

(B) ask well-defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology

(C) collect information by detailed observations and accurate measuring

(D) analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence

(E) demonstrate that repeated investigations may increase the reliability of results

(F) communicate valid conclusions in both written and verbal forms

(3) **Scientific investigation and reasoning.** The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student

(C) draw or develop a model that represents how something works or looks that cannot be seen such as how a soda dispensing machine works

(4) **Scientific investigation and reasoning.** The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:

(A) collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, prisms, mirrors, pan balances, triple beam balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, and notebooks; timing devices, including clocks and stopwatches; and materials to support observations of habitats or organisms such as terrariums and aquariums

(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:

(A) classify matter based on physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating), solubility in water, and the ability to conduct or insulate thermal energy or electric energy

(6) **Force, motion, and energy.** The student knows that energy occurs in many forms and can be observed in cycles, patterns, and systems. The student is expected to:

(A) explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy

(C) demonstrate that light travels in a straight line until it strikes an object or travels through one medium to another and demonstrate that light can be reflected such as the use of mirrors or other shiny surfaces and refracted such as the appearance of an object when observed through water

(D) design an experiment that tests the effect of force on an object

(7) **Earth and space.** The student knows Earth's surface is constantly changing and consists of useful resources. The student is expected to:

(B) recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth's surface by wind, water, and ice

(C) identify alternative energy resources such as wind, solar, hydroelectric, geothermal, and biofuels

## **Science, Grade 6**

(1) **Scientific investigation and reasoning.** The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices. The student is expected to:

(A) demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards

(B) practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials

(2) **Scientific investigation and reasoning.** The student uses scientific inquiry methods during laboratory and field investigations. The student is expected to:

(A) plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology

(B) design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology

(E) analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends

(3) **Scientific investigation and reasoning.** The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student

(B) use models to represent aspects of the natural world such as a model of Earth's layers

(C) identify advantages and limitations of models such as size, scale, properties, and materials

(8) **Force, motion, and energy.** The student knows force and motion are related to potential and kinetic energy. The student is expected to:

(A) compare and contrast potential and kinetic energy

(B) identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces

(C) calculate average speed using distance and time measurements

(E) investigate how inclined planes and pulleys can be used to change the amount of force to move an object