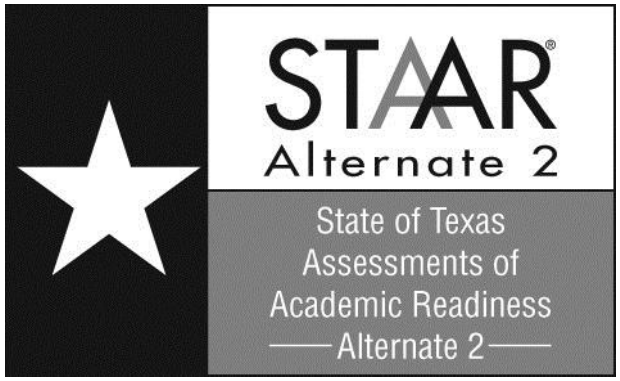

TEKS Curriculum Framework for STAAR Alternate 2

Grade 8 Science

Updated September 2018

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STAAR Reporting Category 1 – Matter and Energy: The student will demonstrate an understanding of the properties of matter and energy and their interactions.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(8.5) Matter and energy. The student knows that matter is composed of atoms and has chemical and physical properties. The student is expected to (A) describe the structure of atoms, including the masses, electrical charges, and locations, of protons and neutrons in the nucleus and electrons in the electron cloud; Readiness Standard (B) identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity; Readiness Standard (C) interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements; Readiness Standard (D) recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in chemical formulas containing subscripts; Readiness Standard (E) investigate how evidence of chemical reactions indicates that new substances with different properties are formed and how that relates to the law of conservation of mass. Readiness Standard **(7.5) Matter and energy.** The student knows that interactions occur between matter and energy. The student is expected to (B) diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids. Supporting Standard	Recognizes that matter is composed of atoms, has distinct properties, and interacts with energy.

Continued

8.5 Prerequisite Skills/Links to TEKS Vertical Alignment

Characteristics and Properties of Matter

- distinguish between physical and chemical changes in matter (7)
- diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids (7)
- recognize that radiant energy from the Sun is transformed into chemical energy through the process of photosynthesis (7)
- research and discuss the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal, and solar resources (6)
- test the physical properties of minerals, including hardness, color, luster, and streak (6)
- calculate density to identify an unknown substance (6)
- compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability (6)
- identify the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change (6)
- recognize that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans, and the atmosphere (6)
- know that an element is a pure substance represented by a chemical symbol and that a compound is a pure substance represented by a chemical formula (6)
- 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 (5)
- demonstrate that some mixtures maintain physical properties of their ingredients such as iron filings and sand and sand and water (5)
- 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 (5)
- compare and contrast a variety of mixtures, including solutions (4)
- measure, compare, and contrast physical properties of matter, including mass, volume, states (solid, liquid, gas), temperature, magnetism, and the ability to sink or float (4)
- explore and recognize that a mixture is created when two materials are combined such as gravel and sand or metal and plastic paper clips (3)
- predict, observe, and record changes in the state of matter caused by heating or cooling such as ice becoming liquid water, condensation forming on the outside of a glass of ice water, or liquid water being heated to the point of becoming water vapor (3)
- 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 (3)
- measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float (3)
- 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 (2)
- demonstrate that things can be done to materials such as cutting, folding, sanding, and melting to change their physical properties (2)

Continued

8.5	Prerequisite Skills/Links to TEKS Vertical Alignment
	• compare changes in materials caused by heating and cooling (2) • classify matter by physical properties, including relative temperature, texture, flexibility, and whether material is a solid or liquid (2) • predict and identify changes in materials caused by heating and cooling (1) • classify objects by observable properties such as larger and smaller, heavier and lighter, shape, color, and texture (1) • observe, record, and discuss how materials can be changed by heating or cooling (K) • observe and record properties of objects, including bigger or smaller, heavier or lighter, shape, color, and texture (K) **Physical science skills** •observe, investigate, describe, and discuss properties and characteristics of common objects (Pre-K)

STAAR Reporting Category 1 – Matter and Energy: The student will demonstrate an understanding of the properties of matter and energy and their interactions.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(7.6) Matter and energy. The student knows that matter has physical and chemical properties and can undergo physical and chemical changes. The student is expected to (A) distinguish between physical and chemical changes in matter. Supporting Standard **(6.6) Matter and energy.** The student knows matter has physical properties that can be used for classification. The student is expected to (A) compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability; and Supporting Standard (B) calculate density to identify an unknown substance. Supporting Standard	Recognizes the physical and chemical properties and changes of matter and how physical properties are used for classification.

7.6 Prerequisite Skills/Links to TEKS Vertical Alignment

Characteristics and Properties of Matter

- distinguish between physical and chemical changes in matter (7)
- diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids (7)
- recognize that radiant energy from the Sun is transformed into chemical energy through the process of photosynthesis (7)
- research and discuss the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal, and solar resources (6)
- test the physical properties of minerals, including hardness, color, luster, and streak (6)
- calculate density to identify an unknown substance (6)
- compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability (6)
- identify the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change (6)
- recognize that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans, and the atmosphere (6)
- know that an element is a pure substance represented by a chemical symbol and that a compound is a pure substance represented by a chemical formula (6)

Continued

7.6	Prerequisite Skills/Links to TEKS Vertical Alignment
	• 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 (5) • demonstrate that some mixtures maintain physical properties of their ingredients such as iron filings and sand and sand and water (5) • 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 (5) • compare and contrast a variety of mixtures, including solutions (4) • measure, compare, and contrast physical properties of matter, including mass, volume, states (solid, liquid, gas), temperature, magnetism, and the ability to sink or float (4) • explore and recognize that a mixture is created when two materials are combined such as gravel and sand or metal and plastic paper clips (3) • predict, observe, and record changes in the state of matter caused by heating or cooling such as ice becoming liquid water, condensation forming on the outside of a glass of ice water, or liquid water being heated to the point of becoming water vapor (3) • 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 (3) • measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float (3) • 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 (2) • demonstrate that things can be done to materials such as cutting, folding, sanding, and melting to change their physical properties (2) • compare changes in materials caused by heating and cooling (2) • classify matter by physical properties, including relative temperature, texture, flexibility, and whether material is a solid or liquid (2) • predict and identify changes in materials caused by heating and cooling (1) • classify objects by observable properties such as larger and smaller, heavier and lighter, shape, color, and texture (1) • observe, record, and discuss how materials can be changed by heating or cooling (K) • observe and record properties of objects, including bigger or smaller, heavier or lighter, shape, color, and texture (K) **Physical science skills** • observe, investigate, describe, and discuss properties and characteristics of common objects (Pre-K)

STAAR Reporting Category 2 – Force, Motion, and Energy: The student will demonstrate an understanding of force, motion, and energy and their relationships.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(8.6) Force, motion, and energy. The student knows that there is a relationship between force, motion, and energy. The student is expected to (A) demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion; Readiness Standard (B) differentiate between speed, velocity, and acceleration; Supporting Standard (C) investigate and describe applications of Newton's three laws of motion such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches. Readiness Standard	Recognizes that relationships exist between force, motion, and energy.

8.6 Prerequisite Skills/Links to TEKS Vertical Alignment

Force and Motion

- demonstrate and illustrate forces that affect motion in organisms such as emergence of seedlings, turgor pressure, geotropism, and circulation of blood (7)
- investigate how inclined planes can be used to change the amount of force to move an object (6)
- measure and graph changes in motion (6)
- calculate average speed using distance and time measurements (6)
- identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces (6)
- design a simple experimental investigation that tests the effect of force on an object (5)
- design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism (4)
- observe forces such as magnetism and gravity acting on objects (3)
- demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons (3)
- trace and compare patterns of movement of objects such as sliding, rolling, and spinning over time (2)
- observe and identify how magnets are used in everyday life (2)
- demonstrate and record 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 (1)
- predict and describe how a magnet can be used to push or pull an object (1)

Continued

8.6	Prerequisite Skills/Links to TEKS Vertical Alignment
	• 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 (K) • observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside (K) • explore interactions between magnets and various materials (K) **Physical science skills** • observe, investigate, describe, and discuss position and motion of objects (Pre-K)

STAAR Reporting Category 2 – Force, Motion, and Energy: The student will demonstrate an understanding of force, motion, and energy and their relationships.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(6.8) 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; Supporting Standard (C) calculate average speed using distance and time measurements; Supporting Standard (D) measure and graph changes in motion. Supporting Standard	Recognizes that force and motion are related to potential and kinetic energy.

6.8 Prerequisite Skills/Links to TEKS Vertical Alignment

Force and Motion

- demonstrate and illustrate forces that affect motion in organisms such as emergence of seedlings, turgor pressure, geotropism, and circulation of blood (7)
- investigate how inclined planes can be used to change the amount of force to move an object (6)
- measure and graph changes in motion (6)
- calculate average speed using distance and time measurements (6)
- identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces (6)
- design a simple experimental investigation that tests the effect of force on an object (5)
- design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism (4)
- observe forces such as magnetism and gravity acting on objects (3)
- demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons (3)
- trace and compare patterns of movement of objects such as sliding, rolling, and spinning over time (2)
- observe and identify how magnets are used in everyday life (2)
- demonstrate and record 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 (1)
- predict and describe how a magnet can be used to push or pull an object (1)
- 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 (K)
- observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside (K)
- explore interactions between magnets and various materials (K)

Continued

6.8	Prerequisite Skills/Links to TEKS Vertical Alignment
	Energy in Its Many Forms • illustrate the transformation of energy within an organism such as the transfer from chemical energy to thermal energy (7) • demonstrate energy transformations such as energy in a flashlight battery changes from chemical energy to electrical energy to light energy (6) • verify through investigations that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature such as an ice cube melting (6) • investigate methods of thermal energy transfer, including conduction, convection, and radiation (6) • compare and contrast potential and kinetic energy (6) • 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 (5) • explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy (5) • differentiate between conductors and insulators of thermal and electrical energy (4) • differentiate among forms of energy, including mechanical, sound, electrical, light, and thermal (4) • explore different forms of energy, including mechanical, light, sound, and thermal in everyday life (3) • investigate the effects on objects by increasing or decreasing amounts of light, heat, and sound energy such as how the color of an object appears different in dimmer light or how heat melts butter (2) • identify and discuss how different forms of energy such as light, thermal, and sound are important to everyday life (1) • use the senses to explore different forms of energy such as light, thermal, and sound (K) *Electricity and Magnetism* • demonstrate that the flow of electricity in closed circuits can produce light, heat, or sound (5) • demonstrate that electricity travels in a closed path, creating an electrical circuit (4) **Physical science skills** • observe, investigate, describe, and discuss position and motion of objects (Pre-K) • observe, investigate, describe, and discuss sources of energy including light, heat, and electricity (Pre-K)

STAAR Reporting Category 2 – Force, Motion, and Energy: The student will demonstrate an understanding of force, motion, and energy and their relationships.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(6.9) Force, motion, and energy. The student knows that the Law of Conservation of Energy states that energy can neither be created nor destroyed, it just changes form. The student is expected to (C) demonstrate energy transformations such as energy in a flashlight battery changes from chemical energy to electrical energy to light energy. Supporting Standard	Knows that energy can neither be created nor destroyed but changes form.

6.9 Prerequisite Skills/Links to TEKS Vertical Alignment

Energy in Its Many Forms

- illustrate the transformation of energy within an organism such as the transfer from chemical energy to thermal energy (7)
- demonstrate energy transformations such as energy in a flashlight battery changes from chemical energy to electrical energy to light energy (6)
- verify through investigations that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature such as an ice cube melting (6)
- investigate methods of thermal energy transfer, including conduction, convection, and radiation (6)
- compare and contrast potential and kinetic energy (6)
- 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 (5)
- explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy (5)
- differentiate between conductors and insulators of thermal and electrical energy (4)
- differentiate among forms of energy, including mechanical, sound, electrical, light, and thermal (4)
- explore different forms of energy, including mechanical, light, sound, and thermal in everyday life (3)
- investigate the effects on objects by increasing or decreasing amounts of light, heat, and sound energy such as how the color of an object appears different in dimmer light or how heat melts butter (2)
- identify and discuss how different forms of energy such as light, thermal, and sound are important to everyday life (1)
- use the senses to explore different forms of energy such as light, thermal, and sound (K)

Electricity and Magnetism

- demonstrate that the flow of electricity in closed circuits can produce light, heat, or sound (5)
- demonstrate that electricity travels in a closed path, creating an electrical circuit (4)

Physical science skills

- observe, investigate, describe, and discuss sources of energy including light, heat, and electricity (Pre-K)

STAAR Reporting Category 3 – Earth and Space: The student will demonstrate an understanding of components, cycles, patterns, and natural events of Earth and space systems.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(8.7) Earth and space. The student knows the effects resulting from cyclical movements of the Sun, Earth, and Moon. The student is expected to (A) model and illustrate how the tilted Earth rotates on its axis, causing day and night, and revolves around the Sun, causing changes in seasons; Readiness Standard (B) demonstrate and predict the sequence of events in the lunar cycle; Readiness Standard (C) relate the positions of the Moon and Sun to their effect on ocean tides. Supporting Standard	Knows that the phases of the moon, the seasons on Earth, and the day and night cycle are the result of cyclical interactions among Earth, the Moon, and the Sun.

8.7 Prerequisite Skills/Links to TEKS Vertical Alignment

Space: The Solar System and the Universe

- identify the accommodations, considering the characteristics of our solar system, that enabled manned space exploration (7)
- analyze the characteristics of objects in our solar system that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere (7)
- describe the history and future of space exploration, including the types of equipment and transportation needed for space travel (6)
- understand that gravity is the force that governs the motion of our solar system (6)
- describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, and comets (6)
- identify and compare the physical characteristics of the Sun, Earth and Moon (5)
- 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 (5)
- identify the planets in Earth's solar system and their position in relation to the Sun (3)
- construct models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions (3)
- observe, describe, and record patterns of objects in the sky, including the appearance of the Moon (2)
- observe and record changes in the appearance of objects in the sky such the Moon and stars, including the Sun (1)
- observe, describe, and illustrate objects in the sky such as the clouds, Moon, and stars, including the Sun (K)

Earth and space science skills

- observe and describe what happens during changes in the earth and sky (Pre-K)
- observe, investigate, describe, and discuss earth materials, and their properties and uses (Pre-K)

STAAR Reporting Category 3 – Earth and Space: The student will demonstrate an understanding of components, cycles, patterns, and natural events of Earth and space systems.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(8.8) Earth and space. The student knows characteristics of the universe. The student is expected to (A) describe components of the universe, including stars, nebulae, and galaxies, and use models such as the Hertzsprung-Russell diagram for classification; Readiness Standard (B) recognize that the Sun is a medium-sized star located in a spiral arm of the Milky Way galaxy and that the Sun is many thousands of times closer to Earth than any other star; Supporting Standard (C) identify how different wavelengths of the electromagnetic spectrum such as visible light and radio waves are used to gain information about components in the universe; Supporting Standard	Recognizes characteristics of the universe and its components.

8.8 Prerequisite Skills/Links to TEKS Vertical Alignment

Space: The Solar System and the Universe

- identify the accommodations, considering the characteristics of our solar system, that enabled manned space exploration (7)
- analyze the characteristics of objects in our solar system that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere (7)
- describe the history and future of space exploration, including the types of equipment and transportation needed for space travel (6)
- understand that gravity is the force that governs the motion of our solar system (6)
- describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, and comets (6)
- identify and compare the physical characteristics of the Sun, Earth and Moon (5)
- 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 (5)
- identify the planets in Earth's solar system and their position in relation to the Sun (3)
- construct models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions (3)
- observe, describe, and record patterns of objects in the sky, including the appearance of the Moon (2)
- observe and record changes in the appearance of objects in the sky such the Moon and stars, including the Sun (1)
- observe, describe, and illustrate objects in the sky such as the clouds, Moon, and stars, including the Sun (K)

Continued

8.8	Prerequisite Skills/Links to TEKS Vertical Alignment
	Earth and space science skills • observe and describe what happens during changes in the earth and sky (Pre-K) • identify, observe, and discuss objects in the sky (Pre-K)

STAAR Reporting Category 3 – Earth and Space: The student will demonstrate an understanding of components, cycles, patterns, and natural events of Earth and space systems.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(8.9) Earth and space. The student knows that natural events can impact Earth systems. The student is expected to (A) describe the historical development of evidence that supports plate tectonic theory; Supporting Standard (B) relate plate tectonics to the formation of crustal features; Readiness Standard (C) interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering. Readiness Standard	Recognizes that natural events affect Earth's systems.

8.9 Prerequisite Skills/Links to TEKS Vertical Alignment

Earth: Formation of Earth's Surface and Earth's Resources

- analyze the effects of weathering, erosion, and deposition on the environment in ecoregions of Texas (7)
- predict and describe how catastrophic events such as floods, hurricanes, or tornadoes impact ecosystems (7)
- describe how plate tectonics causes major geological events such as ocean basin formation, earthquakes, volcanic eruptions, and mountain building (6)
- identify the major tectonic plates, including Eurasian, African, Indo-Australian, Pacific, North American, and South American (6)
- classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation (6)
- build a model to illustrate the compositional and mechanical layers of Earth, including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere (6)
- recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth's surface by wind, water, or ice (5)
- explore the processes that led to the formation of sedimentary rocks and fossil fuels (5)
- observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice (4)
- investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides (3)
- explore and record how soils are formed by weathering of rock and the decomposition of plant and animal remains (3)

Earth: Seasons, Climate, and Weather

- explain how the Sun and the ocean interact in the water cycle (5)
- differentiate between weather and climate (5)

Continued

8.9	Prerequisite Skills/Links to TEKS Vertical Alignment

- collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time (4)
- 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)
- measure, record, and predict changes in weather (4)
- describe and illustrate the Sun as a star composed of gases that provides light and thermal energy (3)
- observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation (3)
- identify the importance of weather and seasonal information to make choices in clothing, activities, and transportation (2)
- measure, record and graph weather information, including temperature, wind conditions, precipitation, and cloud coverage, in order to identify patterns in the data (2)
- demonstrate that air is all around us and observe that wind is moving air (1)
- identify characteristics of the seasons of the year and day and night (1)
- record weather information, including relative temperature such as hot or cold, clear or cloudy, calm or windy, and rainy or icy (1)
- identify events that have repeating patterns, including seasons of the year and day and night (K)
- observe and describe weather changes from day to day and over seasons (K)

Earth: Rock, Soil, and Water

- model the effects of human activity on groundwater and surface water in a watershed (7)
- 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 (4)
- examine properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants (4)
- explore the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved (3)
- distinguish between natural and manmade resources (2)
- identify and compare the properties of natural sources of freshwater and saltwater (2)
- observe, describe, and compare rocks by size, texture, and color (2)
- identify how rocks, soil, and water are used to make products (1)
- identify and describe a variety of natural sources of water, including streams, lakes, and oceans (1)
- observe, compare, describe, and sort components of soil by size, texture, and color (1)
- give examples of ways rocks, soil, and water are useful (K)
- observe and describe physical properties of natural sources of water, including color and clarity (K)
- observe, describe, and sort rocks by size, shape, color, and texture (K)

Continued

8.9	Prerequisite Skills/Links to TEKS Vertical Alignment
	Earth and space science skills • demonstrate the importance of caring for our environment and our planet (Pre-K) • observe, investigate, describe, and discuss earth materials, and their properties and uses (Pre-K)

STAAR Reporting Category 3 – Earth and Space: The student will demonstrate an understanding of components, cycles, patterns, and natural events of Earth and space systems.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(8.10) Earth and space. The student knows that climatic interactions exist among Earth, ocean, and weather systems. The student is expected to (A) recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds; Supporting Standard (B) identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts; Supporting Standard (C) identify the role of the oceans in the formation of weather systems such as hurricanes. Supporting Standard	Knows that interactions exist among Earth, ocean, and weather systems.

8.10 Prerequisite Skills/Links to TEKS Vertical Alignment

Earth: Seasons, Climate, and Weather

- explain how the Sun and the ocean interact in the water cycle (5)
- differentiate between weather and climate (5)
- collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time (4)
- 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)
- measure, record, and predict changes in weather (4)
- describe and illustrate the Sun as a star composed of gases that provides light and thermal energy (3)
- observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation (3)
- identify the importance of weather and seasonal information to make choices in clothing, activities, and transportation (2)
- measure, record and graph weather information, including temperature, wind conditions, precipitation, and cloud coverage, in order to identify patterns in the data (2)
- demonstrate that air is all around us and observe that wind is moving air (1)
- identify characteristics of the seasons of the year and day and night (1)
- record weather information, including relative temperature such as hot or cold, clear or cloudy, calm or windy, and rainy or icy (1)
- identify events that have repeating patterns, including seasons of the year and day and night (K)
- observe and describe weather changes from day to day and over seasons (K)

Continued

8.10	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	Earth: Rock, Soil, and Water • model the effects of human activity on groundwater and surface water in a watershed (7) • 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 (4) • examine properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants (4) • explore the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved (3) • distinguish between natural and manmade resources (2) • identify and compare the properties of natural sources of freshwater and saltwater (2) • observe, describe, and compare rocks by size, texture, and color (2) • identify how rocks, soil, and water are used to make products (1) • identify and describe a variety of natural sources of water, including streams, lakes, and oceans (1) • observe, compare, describe, and sort components of soil by size, texture, and color (1) • give examples of ways rocks, soil, and water are useful (K) • observe and describe physical properties of natural sources of water, including color and clarity (K) • observe, describe, and sort rocks by size, shape, color, and texture (K) *Earth: Formation of Earth's Surface and Earth's Resources* • analyze effects of weathering, erosion, and deposition on the environment in ecoregions of Texas (7) • predict and describe how catastrophic events such as floods, hurricanes, or tornadoes impact ecosystems (7) • describe how plate tectonics causes major geological events such as ocean basin formation, earthquakes, volcanic eruptions, and analyze mountain building (6) • identify the major tectonic plates, including Eurasian, African, Indo-Australian, Pacific, North American, and South American (6) • classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation (6) • build a model to illustrate the compositional and mechanical layers of Earth, including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere (6) • recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth's surface by wind, water, or ice (5) • explore the processes that led to the formation of sedimentary rocks and fossil fuels (5) • observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice (4) • investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides (3) • explore and record how soils are formed by weathering of rock and the decomposition of plant and animal remains (3) **Earth and space science skills** • demonstrate the importance of caring for our environment and our planet (Pre-K) • observe, investigate, describe, and discuss earth materials, and their properties and uses (Pre-K)

STAAR Reporting Category 3 – Earth and Space: The student will demonstrate an understanding of components, cycles, patterns, and natural events of Earth and space systems.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectation	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectation**
(7.8) Earth and space. The student knows that natural events and human activity can impact Earth systems. The student is expected to (C) model the effects of human activity on groundwater and surface water in a watershed. Supporting Standard	Recognizes the relationship between groundwater and surface water in watersheds.

7.8 Prerequisite Skills/Links to TEKS Vertical Alignment

Earth: Rock, Soil, and Water

- model the effects of human activity on groundwater and surface water in a watershed (7)
- 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 (4)
- examine properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants (4)
- explore the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved (3)
- distinguish between natural and manmade resources (2)
- identify and compare the properties of natural sources of freshwater and saltwater (2)
- observe, describe, and compare rocks by size, texture, and color (2)
- identify how rocks, soil, and water are used to make products (1)
- identify and describe a variety of natural sources of water, including streams, lakes, and oceans (1)
- observe, compare, describe, and sort components of soil by size, texture, and color (1)
- give examples of ways rocks, soil, and water are useful (K)
- observe and describe physical properties of natural sources of water, including color and clarity (K)
- observe, describe, and sort rocks by size, shape, color, and texture (K)

Earth: Seasons, Climate, and Weather

- explain how the Sun and the ocean interact in the water cycle (5)
- differentiate between weather and climate (5)
- collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time (4)
- 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)
- measure, record, and predict changes in weather (4)

Continued

7.8	Prerequisite Skills/Links to TEKS Vertical Alignment
	• describe and illustrate the Sun as a star composed of gases that provides light and thermal energy (3) • observe, measure, record, and compare day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation (3) • identify the importance of weather and seasonal information to make choices in clothing, activities, and transportation (2) • measure, record and graph weather information, including temperature, wind conditions, precipitation, and cloud coverage, in order to identify patterns in the data (2) • demonstrate that air is all around us and observe that wind is moving air (1) • identify characteristics of the seasons of the year and day and night (1) • record weather information, including relative temperature such as hot or cold, clear or cloudy, calm or windy, and rainy or icy (1) • identify events that have repeating patterns, including seasons of the year and day and night (K) • observe and describe weather changes from day to day and over seasons (K) *Earth: Formation of Earth's Surface and Earth's Resources* • analyze the effects of weathering, erosion, and deposition on the environment in ecoregions of Texas (7) • predict and describe how catastrophic events such as floods, hurricanes, or tornadoes impact ecosystems (7) • describe how plate tectonics causes major geological events such as ocean basin formation, earthquakes, volcanic eruptions, and mountain building (6) • identify the major tectonic plates, including Eurasian, African, Indo-Australian, Pacific, North American, and South American (6) • classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation (6) • build a model to illustrate the compositional and mechanical layers of Earth, including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere (6) • recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth's surface by wind, water, or ice (5) • explore the processes that led to the formation of sedimentary rocks and fossil fuels (5) • observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice (4) • investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides (3) • explore and record how soils are formed by weathering of rock and the decomposition of plant and animal remains (3) **Earth and space science skills** • demonstrate the importance of caring for our environment and our planet (Pre-K) • observe, investigate, describe, and discuss earth materials, and their properties and uses (Pre-K)

STAAR Reporting Category 3 – Earth and Space: The student will demonstrate an understanding of components, cycles, patterns, and natural events of Earth and space systems.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectation	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectation**
(6.11) Earth and space. The student understands the organization of our solar system and the relationships among the various bodies that comprise it. The student is expected to (B) understand that gravity is the force that governs the motion of our solar system. Supporting Standard	Knows the organization and relationships among components of the solar system.

6.11	**Prerequisite Skills/Links to TEKS Vertical Alignment**

Space: The Solar System and the Universe

- identify the accommodations, considering the characteristics of our solar system, that enabled manned space exploration (7)
- analyze the characteristics of objects in our solar system that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere (7)
- describe the history and future of space exploration, including the types of equipment and transportation needed for space travel (6)
- understand that gravity is the force that governs the motion of our solar system (6)
- describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, and comets (6)
- identify and compare the physical characteristics of the Sun, Earth and Moon (5)
- 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 (5)
- identify the planets in Earth's solar system and their position in relation to the Sun (3)
- construct models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions (3)
- observe, describe, and record patterns of objects in the sky, including the appearance of the Moon (2)
- observe and record changes in the appearance of objects in the sky such the Moon and stars, including the Sun (1)
- observe, describe, and illustrate objects in the sky such as the clouds, Moon, and stars, including the Sun (K)

Earth and space science skills

- observe and describe what happens during changes in the earth and sky (Pre-K)
- identify, observe, and discuss objects in the sky (Pre-K)

STAAR Reporting Category 4 – Organisms and Environments: The student will demonstrate an understanding of the structures and functions of living organisms and their interdependence on each other and on their environment.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(8.11) Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. The student is expected to (A) investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as quantity of light, water, range of temperatures, or soil composition; Readiness Standard (B) explore how short- and long-term environmental changes affect organisms and traits in subsequent populations; Readiness Standard (C) recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources have modified these systems. Supporting Standard **(7.11) Organisms and environments.** The student knows that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations. The student is expected to (A) examine organisms or their structures such as insects or leaves and use dichotomous keys for identification; Supporting Standard (C) identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (*Geospiza fortis*) or domestic animals and hybrid plants. Supporting Standard	Recognizes the interdependence of organisms with each other and with their environment.

Continued

8.11	**Prerequisite Skills/Links to TEKS Vertical Alignment**

Environment: Adaptations and Biological Evolution

- investigate and explain how internal structures of organisms have adaptations that allow specific functions such as gills in fish, hollow bones in birds, or xylem in plants (7)
- identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (Geospiza fortis) or domestic animals and hybrid plants (7)
- explain variation within a population or species by comparing external features, behaviors, or physiology of organisms that enhance their survival such as migration, hibernation, or storage of food in a bulb (7)
- 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 (5)
- explore how structures and functions enable organisms to survive in their environment (4)
- explore how structures and functions of plants and animals allow them to survive in a particular environment (3)
- investigate how the external characteristics of an animal are related to where it lives, how it moves, and what it eats (1)

Organisms: Classification of Organisms

- examine organisms or their structures such as insects or leaves and use dichotomous keys for identification (7)
- identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multicellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized kingdoms (6)
- recognize that the broadest taxonomic classification of living organisms is divided into currently recognized domains (6)

Environment: Identify How Organisms Meet Their Basic Needs

- observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant (2)
- observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs (2)
- identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things (2)
- identify the basic needs of plants and animals (2)
- identify and compare the parts of plants (1)
- sort and classify living and nonliving things based upon whether they have basic needs and produce offspring (1)
- identify basic parts of plants and animals (K)
- sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape (K)
- examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants (K)
- differentiate between living and nonliving things based upon whether they have basic needs and produce offspring (K)

Continued

8.11	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	Environment: How Organisms Depend on Each Other and Their Environment • observe, record, and describe the role of ecological succession such as in a microhabitat of a garden with weeds (7) • describe how biodiversity contributes to the sustainability of an ecosystem (7) • observe and describe how different environments, including microhabitats in schoolyards and biomes, support different varieties of organisms (7) • diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem (6) • describe biotic and abiotic parts of an ecosystem in which organisms interact (6) • identify fossils as evidence of past living organisms and the nature of the environments at the time using models (5) • 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) • describe the flow of energy within a food web, including the roles of the Sun, producers, consumers, and decomposers (5) • observe the way organisms live and survive in their ecosystem by interacting with the living and nonliving components (5) • describe the flow of energy through food webs, beginning with the Sun, and predict how changes in the ecosystem affect the food web (4) • investigate that most producers need sunlight, water, and carbon dioxide to make their own food, while consumers are dependent on other organisms for food (4) • describe environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations (3) • 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 (3) • observe and describe the physical characteristics of environments and how they support populations and communities of plants and animals within an ecosystem (3) • compare the ways living organisms depend on each other and on their environments such as through food chains (2) • gather evidence of interdependence among living organisms such as energy transfer through food chains or animals using plants for shelter (1) • analyze and record examples of interdependence found in various situations such as terrariums and aquariums or pet and caregiver (1) **Personal safety and health skills** • identify good habits of nutrition and exercise (Pre-K) • practice good habits of personal health and hygiene (Pre-K) **Life sciences skills** • observe, investigate, describe, and discuss the relationship of organisms to their environments (Pre-K) • observe, investigate, describe, and discuss the characteristics of organisms (Pre-K)

STAAR Reporting Category 4 – Organisms and Environments: The student will demonstrate an understanding of the structures and functions of living organisms and their interdependence on each other and on their environment.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(7.10) Organisms and environments. The student knows that there is a relationship between organisms and the environment. The student is expected to (B) describe how biodiversity contributes to the sustainability of an ecosystem; Supporting Standard (C) observe, record, and describe the role of ecological succession such as in a microhabitat of a garden with weeds. Supporting Standard	Knows the importance of biodiversity to the health of an ecosystem.

7.10 Prerequisite Skills/Links to TEKS Vertical Alignment

Environment: How Organisms Depend on Each Other and Their Environment

- observe, record, and describe the role of ecological succession such as in a microhabitat of a garden with weeds (7)
- describe how biodiversity contributes to the sustainability of an ecosystem (7)
- observe and describe how different environments, including microhabitats in schoolyards and biomes, support different varieties of organisms (7)
- diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem (6)
- describe biotic and abiotic parts of an ecosystem in which organisms interact (6)
- identify fossils as evidence of past living organisms and the nature of the environments at the time using models (5)
- 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)
- describe the flow of energy within a food web, including the roles of the Sun, producers, consumers, and decomposers (5)
- observe the way organisms live and survive in their ecosystem by interacting with the living and nonliving components (5)
- describe the flow of energy through food webs, beginning with the Sun, and predict how changes in the ecosystem affect the food web (4)
- investigate that most producers need sunlight, water, and carbon dioxide to make their own food, while consumers are dependent on other organisms for food (4)
- describe environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations (3)
- 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 (3)
- observe and describe the physical characteristics of environments and how they support populations and communities of plants and animals within an ecosystem (3)

Continued

7.10	Prerequisite Skills/Links to TEKS Vertical Alignment
	• compare the ways living organisms depend on each other and on their environments such as through food chains (2) • gather evidence of interdependence among living organisms such as energy transfer through food chains or animals using plants for shelter (1) • analyze and record examples of interdependence found in various situations such as terrariums and aquariums or pet and caregiver (1) *Environment: Identify How Organisms Meet Their Basic Needs* • observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant (2) • observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs (2) • identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things (2) • identify the basic needs of plants and animals (2) • identify and compare the parts of plants (1) • sort and classify living and nonliving things based upon whether they have basic needs and produce offspring (1) • identify basic parts of plants and animals (K) • sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape (K) • examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants (K) • differentiate between living and nonliving things based upon whether they have basic needs and produce offspring (K) **Life sciences skills** • observe, investigate, describe, and discuss the relationship of organisms to their environments (Pre-K) • observe, investigate, describe, and discuss the characteristics of organisms (Pre-K) **Personal safety and health skills** • practice good habits of personal health and hygiene (Pre-K) • identify good habits of nutrition and exercise (Pre-K)

STAAR Reporting Category 4 – Organisms and Environments: The student will demonstrate an understanding of the structures and functions of living organisms and their interdependence on each other and on their environment.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(7.12) Organisms and environments. The student knows that living systems at all levels of organization demonstrate the complementary nature of structure and function. The student is expected to (B) identify the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, excretory, reproductive, integumentary, nervous, and endocrine systems; Supporting Standard (D) differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole; Supporting Standard (F) recognize the components of cell theory. Supporting Standard **(6.12) Organisms and environments.** The student knows all organisms are classified into domains and kingdoms. Organisms within these taxonomic groups share similar characteristics that allow them to interact with the living and nonliving parts of their ecosystem. The student is expected to (D) identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multicellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized kingdoms. Supporting Standard	Recognizes the classification of organisms.

Continued

7.12	Prerequisite Skills/Links to TEKS Vertical Alignment

Organisms: Structure and Function of Living Systems

- recognize the components of cell theory (7)
- compare the functions of cell organelles to the functions of an organ system (7)
- differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole (7)
- recognize levels of organization in plants and animals, including cells, tissues, organs, organ systems, and organisms (7)
- identify the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, excretory, reproductive, integumentary, nervous, and endocrine systems (7)
- recognize that the presence of a nucleus is a key factor used to determine whether a cell is prokaryotic or eukaryotic (6)
- understand that all organisms are composed of one or more cells (6)

Environment: Organisms' Response to Their Environment

- describe and relate responses in organisms that may result from internal stimuli such as wilting in plants and fever or vomiting in animals that allow them to maintain balance (7)
- investigate how organisms respond to external stimuli found in the environment such as phototropism and fight or flight (7)

Organisms: Classification of Organisms

- examine organisms or their structures such as insects or leaves and use dichotomous keys for identification (7)
- identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multicellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized kingdoms (6)
- recognize that the broadest taxonomic classification of living organisms is divided into currently recognized domains (6)

Environment: Identify How Organisms Meet Their Basic Needs

- observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant (2)
- observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs (2)
- identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things (2)
- identify the basic needs of plants and animals (2)
- identify and compare the parts of plants (1)
- sort and classify living and nonliving things based upon whether they have basic needs and produce offspring (1)
- identify basic parts of plants and animals (K)
- sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape (K)
- examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants (K)
- differentiate between living and nonliving things based upon whether they have basic needs and produce offspring (K)

Continued

7.12	**Prerequisite Skills/Links to TEKS Vertical Alignment**

Environment: How Organisms Depend on Each Other and Their Environment

- observe, record, and describe the role of ecological succession such as in a microhabitat of a garden with weeds (7)
- describe how biodiversity contributes to the sustainability of an ecosystem (7)
- observe and describe how different environments, including microhabitats in schoolyards and biomes, support different varieties of organisms (7)
- diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem (6)
- describe biotic and abiotic parts of an ecosystem in which organisms interact (6)
- identify fossils as evidence of past living organisms and the nature of the environments at the time using models (5)
- 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)
- describe the flow of energy within a food web, including the roles of the Sun, producers, consumers, and decomposers (5)
- observe the way organisms live and survive in their ecosystem by interacting with the living and nonliving components (5)
- describe the flow of energy through food webs, beginning with the Sun, and predict how changes in the ecosystem affect the food web (4)
- investigate that most producers need sunlight, water, and carbon dioxide to make their own food, while consumers are dependent on other organisms for food (4)
- describe environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations (3)
- 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 (3)
- observe and describe the physical characteristics of environments and how they support populations and communities of plants and animals within an ecosystem (3)
- compare the ways living organisms depend on each other and on their environments such as through food chains (2)
- gather evidence of interdependence among living organisms such as energy transfer through food chains or animals using plants for shelter (1)
- analyze and record examples of interdependence found in various situations such as terrariums and aquariums or pet and caregiver (1)

Environment: Adaptations and Biological Evolution

- investigate and explain how internal structures of organisms have adaptations that allow specific functions such as gills in fish, hollow bones in birds, or xylem in plants (7)
- identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (Geospiza fortis) or domestic animals and hybrid plants (7)

Continued

7.12	Prerequisite Skills/Links to TEKS Vertical Alignment
	• explain variation within a population or species by comparing external features, behaviors, or physiology of organisms that enhance their survival such as migration, hibernation, or storage of food in a bulb (7) • 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 (5) • explore how structures and functions enable organisms to survive in their environment (4) • explore how structures and functions of plants and animals allow them to survive in a particular environment (3) • investigate how the external characteristics of an animal are related to where it lives, how it moves, and what it eats (1) **Personal safety and health skills** • practice good habits of personal health and hygiene (Pre-K) • identify good habits of nutrition and exercise (Pre-K) **Life sciences skills** • observe, investigate, describe, and discuss the relationship of organisms to their environments (Pre-K) • observe, investigate, describe, and discuss the characteristics of organisms (Pre-K)

STAAR Reporting Category 4 – Organisms and Environments: The student will demonstrate an understanding of the structures and functions of living organisms and their interdependence on each other and on their environment.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
(7.14) Organisms and environments. The student knows that reproduction is a characteristic of living organisms and that the instructions for traits are governed in the genetic material. The student is expected to (B) compare the results of uniform or diverse offspring from asexual or sexual reproduction; Supporting Standard (C) recognize that inherited traits of individuals are governed in the genetic material found in the genes within chromosomes in the nucleus. Supporting Standard	Recognizes that inherited traits are determined by genetic material.

7.14 Prerequisite Skills/Links to TEKS Vertical Alignment

Organisms: Genetic Material and Its Role in Inheritance

- recognize that inherited traits of individuals are governed in the genetic material found in the genes within chromosomes in the nucleus (7)
- compare the results of uniform or diverse offspring from asexual or sexual reproduction (7)
- define heredity as the passage of genetic instructions from one generation to the next generation (7)

Organisms: Inherited Traits and Learned Behaviors

- 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 (5)
- 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 (4)
- compare ways that young animals resemble their parents (1)
- identify ways that young plants resemble the parent plant (K)

Organisms: Life Cycles

- explore, illustrate, and compare life cycles in living organisms such as beetles, crickets, radishes, or lima beans (4)
- investigate and compare how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady beetles (3)
- investigate and record some of the unique stages that insects such as grasshoppers and butterflies undergo during their life cycle (2)
- observe and record life cycles of animals such as a chicken, frog, or fish (1)
- observe changes that are part of a simple life cycle of a plant: seed, seedling, plant, flower, and fruit (K)

Scientific Investigation and Reasoning Standards: Scientific investigation and reasoning standards will not be listed under a separate reporting category. These standards will be incorporated into assessment tasks in reporting categories 1–4 and identified along with content standards.

TEKS Knowledge and Skills Statement/STAAR-Tested Student Expectations

(8.1) 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 Texas Education Agency-approved safety standards;

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

8.1 Prerequisite Skills/Links to TEKS Vertical Alignment

Demonstrate Home and School Safety Practices

- use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher (6–8)
- demonstrate safe practices during laboratory and field investigations as outlined in Texas Education Agency-approved safety standards (6–8)
- 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 (5)
- 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 (4)
- demonstrate safe practices as described in Texas Education Agency-approved safety standards during classroom and outdoor investigations using safety equipment as appropriate, including safety goggles or chemical splash goggles, as appropriate, and gloves (3)
- identify, describe, and demonstrate safe practices as outlined in Texas Education Agency-approved safety standards during classroom and outdoor investigations, including wearing safety goggles or chemical splash goggles, as appropriate, washing hands, and using materials appropriately (2)
- identify, discuss, and demonstrate safe and healthy practices as outlined in Texas Education Agency-approved safety standards during classroom and outdoor investigations, including wearing safety goggles or chemical splash goggles, as appropriate, washing hands, and using materials appropriately (K-1)

Use and Conservation of School Resources and Laboratory Materials

- practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials (6–8)
- make informed choices in the conservation, disposal, and recycling of materials (5)

Continued

	• 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 (4) • make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics (3) • 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) • identify and learn how to use natural resources and materials, including conservation and reuse or recycling of paper, plastic, and metals (1) • demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reusing or recycling paper, plastic, and metal (K) **Personal safety and health skills** • practice good habits of personal safety (Pre-K)

Scientific Investigation and Reasoning Standards: Scientific investigation and reasoning standards will not be listed under a separate reporting category. These standards will be incorporated into assessment tasks in reporting categories 1–4 and identified along with content standards.

TEKS Knowledge and Skills Statement/STAAR-Tested Student Expectations

(8.2) Scientific investigation and reasoning. The student uses scientific practices 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;

(C) collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;

(D) construct tables and graphs, using repeated trials and means, to organize data and identify patterns;

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

8.2 Prerequisite Skills/Links to TEKS Vertical Alignment

Plan and Conduct Investigations

- plan and implement comparative and descriptive investigations by making observations, asking well defined questions, and using appropriate equipment and technology (6–8)
- design and implement experimental investigations by making observations, asking well defined questions, formulating testable hypotheses, and using appropriate equipment and technology (6–8)
- ask well defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology (5)
- describe, plan, and implement simple experimental investigations testing one variable (5)
- 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 (4)
- 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 (3)
- plan and conduct descriptive investigations (2)
- ask questions about organisms, objects, and events during observations and investigations (2)
- plan and conduct simple descriptive investigations (K–1)
- ask questions about organisms, objects, and events observed in the natural world (K–1)

Continued

8.2	Prerequisite Skills/Links to TEKS Vertical Alignment

Gather Information

- use appropriate tools, including life science models, hand lenses, stereoscopes, microscopes, beakers, Petri dishes, microscope slides, graduated cylinders, test tubes, meter sticks, metric rulers, metric tape measures, timing devices, hot plates, balances, thermometers, calculators, water test kits, computers, temperature and pH probes, collecting nets, insect traps, globes, digital cameras, journals/notebooks, and other necessary equipment to collect, record, and analyze information (7)
- collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers (6–8)
- use appropriate tools, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, balances, microscopes, thermometers, calculators, computers, timing devices, and other necessary equipment to collect, record, and analyze information (6)
- 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 of organisms such as terrariums and aquariums (5)
- collect and record information by detailed observations and accurate measuring (5)
- 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 (4)
- 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 (4)
- collect, record, and analyze information using tools, including cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, magnets, collecting nets, notebooks, and Sun, Earth, and Moon system models; timing devices; and materials to support observation of habitats of organisms such as terrariums and aquariums (3)
- collect and record data by observing and measuring using the metric system and recognize differences between observed and measured data (3)
- measure and compare organisms and objects (2)
- collect, record, and compare information using tools, including computers, hand lenses, rulers, plastic beakers, magnets, collecting nets, notebooks, and safety goggles or chemical splash goggles, as appropriate; timing devices; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums (2)
- collect data from observations using scientific tools (2)
- record and organize data using pictures, numbers, and words (1–2)

Continued

8.2	Prerequisite Skills/Links to TEKS Vertical Alignment

- measure and compare organisms and objects using non-standard units (1)
- collect, record, and compare information using tools, including computers, hand lenses, primary balances, cups, bowls, magnets, collecting nets, notebooks, and safety goggles or chemical splash goggles, as appropriate; timing devices; non-standard measuring items; weather instruments such as demonstration thermometers and wind socks; and materials to support observations of habitats of organisms such as aquariums and terrariums (1)
- collect data and make observations using simple tools (K–1)
- use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment (K)
- collect information using tools, including computing devices, hand lenses, primary balances, cups, bowls, magnets, collecting nets, and notebooks; timing devices; non-standard measuring items; weather instruments such as demonstration thermometers; and materials to support observations of habitats of organisms such as terrariums and aquariums (K)
- record and organize data and observations using pictures, numbers, and words (K)

Organize Information

- construct tables and graphs, using repeated trials and means, to organize data and identify patterns (6–8)
- construct appropriate simple graphs, tables, maps, and charts using technology, including computers, to organize, examine, and evaluate information (5)
- construct simple tables, charts, bar graphs, and maps using tools and current technology to organize, examine, and evaluate data (4)
- construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data (3)
- compare results of investigations with what students and scientists know about the world (2)

Analyze Evidence and Communicate Conclusions

- analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student (6–8)
- analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends (6–8)
- communicate valid conclusions in both written and verbal forms (5)
- analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence (5)
- communicate valid oral and written results supported by data (4)
- perform repeated investigations to increase the reliability of results (4)
- analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured (4)
- analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing (3–5)
- demonstrate that repeated investigations may increase the reliability of results (3, 5)
- communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion (3)
- analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations (3)

Continued

8.2	Prerequisite Skills/Links to TEKS Vertical Alignment
	• communicate observations and justify explanations using student-generated data from simple descriptive investigations (2) • communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations (1) • communicate observations about simple descriptive investigations (K) **Physical science skills** • use simple measuring devices to learn about objects (Pre-K)

Scientific Investigation and Reasoning Standards: Scientific investigation and reasoning standards will not be listed under a separate reporting category. These standards will be incorporated into assessment tasks in reporting categories 1–4 and identified along with content standards.

TEKS Knowledge and Skills Statement/STAAR-Tested Student Expectations

(8.3) 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) analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;

(B) use models to represent aspects of the natural world such as an atom, a molecule, space, or a geologic feature;

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

(D) relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content.

8.3 Prerequisite Skills/Links to TEKS Vertical Alignment

Application of Science

- identify and explain a problem and propose a task and solution for the problem (2)
- make predictions based on observable patterns (1–2)
- identify and explain a problem and propose a solution (1)
- make predictions based on observable patterns in nature (K)
- identify and explain a problem such as the impact of littering and propose a solution (K)

Gather Information

- use appropriate tools, including life science models, hand lenses, stereoscopes, microscopes, beakers, Petri dishes, microscope slides, graduated cylinders, test tubes, meter sticks, metric rulers, metric tape measures, timing devices, hot plates, balances, thermometers, calculators, water test kits, computers, temperature and pH probes, collecting nets, insect traps, globes, digital cameras, journals/notebooks, and other necessary equipment to collect, record, and analyze information (7)
- collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers (6–8)
- use appropriate tools, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, balances, microscopes, thermometers, calculators, computers, timing devices, and other necessary equipment to collect, record, and analyze information (6)
- 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 of organisms such as terrariums and aquariums (5)
- collect and record information by detailed observations and accurate measuring (5)

Continued

8.3	Prerequisite Skills/Links to TEKS Vertical Alignment
	• 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 (4) • 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 (4) • collect, record, and analyze information using tools, including cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, magnets, collecting nets, notebooks, and Sun, Earth, and Moon system models; timing devices; and materials to support observation of habitats of organisms such as terrariums and aquariums (3) • collect and record data by observing and measuring using the metric system and recognize differences between observed and measured data (3) • measure and compare organisms and objects (2) • collect, record, and compare information using tools, including computers, hand lenses, rulers, plastic beakers, magnets, collecting nets, notebooks, and safety goggles or chemical splash goggles, as appropriate; timing devices; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums (2) • collect data from observations using scientific tools (2) • record and organize data using pictures, numbers, and words (1–2) • measure and compare organisms and objects using non-standard units (1) • collect, record, and compare information using tools, including computers, hand lenses, primary balances, cups, bowls, magnets, collecting nets, notebooks, and safety goggles or chemical splash goggles, as appropriate; timing devices; non-standard measuring items; weather instruments such as demonstration thermometers and wind socks; and materials to support observations of habitats of organisms such as aquariums and terrariums (1) • collect data and make observations using simple tools (K–1) • use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment (K) • collect information using tools, including computing devices, hand lenses, primary balances, cups, bowls, magnets, collecting nets, and notebooks; timing devices; non-standard measuring items; weather instruments such as demonstration thermometers; and materials to support observations of habitats of organisms such as terrariums and aquariums (K) • record and organize data and observations using pictures, numbers, and words (K)

Continued

8.3	Prerequisite Skills/Links to TEKS Vertical Alignment

Organize Information

- construct tables and graphs, using repeated trials and means, to organize data and identify patterns (6–8)
- construct appropriate simple graphs, tables, maps, and charts using technology, including computers, to organize, examine, and evaluate information (5)
- construct simple tables, charts, bar graphs, and maps using tools and current technology to organize, examine, and evaluate data (4)
- construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data (3)
- compare results of investigations with what students and scientists know about the world (2)

Analyze Evidence and Communicate Conclusions

- analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student (6–8)
- analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends (6–8)
- communicate valid conclusions in both written and verbal forms (5)
- analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence (5)
- communicate valid oral and written results supported by data (4)
- perform repeated investigations to increase the reliability of results (4)
- analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured (4)
- analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing (3–5)
- demonstrate that repeated investigations may increase the reliability of results (3, 5)
- communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion (3)
- analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations (3)
- communicate observations and justify explanations using student-generated data from simple descriptive investigations (2)
- communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations (1)
- communicate observations about simple descriptive investigations (K)

Use Models

- use models to represent aspects of the natural world such as human body systems and plant and animal cells (7)
- identify advantages and limitations of models such as size, scale, properties, and materials (6–8)
- use models to represent aspects of the natural world such as a model of Earth's layers (6)
- 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 (5)

Continued

8.3	Prerequisite Skills/Links to TEKS Vertical Alignment
	• represent the natural world using models such as the water cycle and stream tables and identify their limitations, including accuracy and size (4) • represent the natural world using models such as volcanoes or the Sun, Earth, and Moon system and identify their limitations, including size, properties, and materials (3) *History and Impact of Scientific Research* • relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content (6–8) • connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists (3–5) • identify what a scientist is and explore what different scientists do (2) • describe what scientists do (1) • explore that scientists investigate different things in the natural world and use tools to help in their investigations (K) **Physical science skills** • use simple measuring devices to learn about objects (Pre-K)

Scientific Investigation and Reasoning Standards: Scientific investigation and reasoning standards will not be listed under a separate reporting category. These standards will be incorporated into assessment tasks in reporting categories 1–4 and identified along with content standards.

TEKS Knowledge and Skills Statement/STAAR-Tested Student Expectations

(8.4) Scientific investigation and reasoning. The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to

(A) use appropriate tools, including lab journals/notebooks, beakers, meter sticks, graduated cylinders, anemometers, psychrometers, hot plates, test tubes, spring scales, balances, microscopes, thermometers, calculators, computers, spectroscopes, timing devices, and other necessary equipment to collect, record, and analyze information;

(B) use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.

8.4 Prerequisite Skills/Links to TEKS Vertical Alignment

Demonstrate Home and School Safety Practices

- use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher (6–8)
- demonstrate safe practices during laboratory and field investigations as outlined in Texas Education Agency-approved safety standards (6–8)
- 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 (5)
- 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 (4)
- demonstrate safe practices as described in Texas Education Agency-approved safety standards during classroom and outdoor investigations using safety equipment as appropriate, including safety goggles or chemical splash goggles, as appropriate, and gloves (3)
- identify, describe, and demonstrate safe practices as outlined in Texas Education Agency-approved safety standards during classroom and outdoor investigations, including wearing safety goggles or chemical splash goggles, as appropriate, washing hands, and using materials appropriately (2)
- identify, discuss, and demonstrate safe and healthy practices as outlined in Texas Education Agency-approved safety standards during classroom and outdoor investigations, including wearing safety goggles or chemical splash goggles, as appropriate, washing hands, and using materials appropriately (K-1)

Continued

8.4	Prerequisite Skills/Links to TEKS Vertical Alignment
	Gather Information • use appropriate tools, including life science models, hand lenses, stereoscopes, microscopes, beakers, Petri dishes, microscope slides, graduated cylinders, test tubes, meter sticks, metric rulers, metric tape measures, timing devices, hot plates, balances, thermometers, calculators, water test kits, computers, temperature and pH probes, collecting nets, insect traps, globes, digital cameras, journals/notebooks, and other necessary equipment to collect, record, and analyze information (7) • collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers (6–8) • use appropriate tools, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, balances, microscopes, thermometers, calculators, computers, timing devices, and other necessary equipment to collect, record, and analyze information (6) • 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 of organisms such as terrariums and aquariums (5) • collect and record information by detailed observations and accurate measuring (5) • 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 (4) • 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 (4) • collect, record, and analyze information using tools, including cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, magnets, collecting nets, notebooks, and Sun, Earth, and Moon system models; timing devices; and materials to support observation of habitats of organisms such as terrariums and aquariums (3) • collect and record data by observing and measuring using the metric system and recognize differences between observed and measured data (3) • measure and compare organisms and objects (2) • collect, record, and compare information using tools, including computers, hand lenses, rulers, plastic beakers, magnets, collecting nets, notebooks, and safety goggles or chemical splash goggles, as appropriate; timing devices; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums (2) *Continued*

8.4	Prerequisite Skills/Links to TEKS Vertical Alignment

- collect data from observations using scientific tools (2)
- record and organize data using pictures, numbers, and words (1–2)
- measure and compare organisms and objects using non-standard units (1)
- collect, record, and compare information using tools, including computers, hand lenses, primary balances, cups, bowls, magnets, collecting nets, notebooks, and safety goggles or chemical splash goggles, as appropriate; timing devices; non-standard measuring items; weather instruments such as demonstration thermometers and wind socks; and materials to support observations of habitats of organisms such as aquariums and terrariums (1)
- collect data and make observations using simple tools (K–1)
- use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment (K)
- collect information using tools, including computing devices, hand lenses, primary balances, cups, bowls, magnets, collecting nets, and notebooks; timing devices; non-standard measuring items; weather instruments such as demonstration thermometers; and materials to support observations of habitats of organisms such as terrariums and aquariums (K)
- record and organize data and observations using pictures, numbers, and words (K)

Organize Information

- construct tables and graphs, using repeated trials and means, to organize data and identify patterns (6–8)
- construct appropriate simple graphs, tables, maps, and charts using technology, including computers, to organize, examine, and evaluate information (5)
- construct simple tables, charts, bar graphs, and maps using tools and current technology to organize, examine, and evaluate data (4)
- construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data (3)
- compare results of investigations with what students and scientists know about the world (2)

Analyze Evidence and Communicate Conclusions

- analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student (6–8; Biology)
- analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends (6–8)
- communicate valid conclusions in both written and verbal forms (5)
- analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence (5)
- communicate valid oral and written results supported by data (4)
- perform repeated investigations to increase the reliability of results (4)
- analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured (4)
- analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing (3–5)

Continued

8.4	Prerequisite Skills/Links to TEKS Vertical Alignment
	• demonstrate that repeated investigations may increase the reliability of results (3, 5) • communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion (3) • analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations (3) • communicate observations and justify explanations using student-generated data from simple descriptive investigations (2) • communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations (1) • communicate observations about simple descriptive investigations (K) **Physical science skills** • use simple measuring devices to learn about objects (Pre-K) **Personal safety and health skills** • practice good habits of personal safety (Pre-K)