Process Standards (Scientific and Engineering Practices/Recurring Themes and Concepts)

3.1 **Scientific and engineering practices.** The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models.

3.2 **Scientific and engineering practices.** The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs.

3.5 **Recurring themes and concepts.** The student understands that recurring themes and concepts provide a framework for making connections across disciplines.

Tools to Know

3.1(A) ask questions and define problems based on observations or information from text, phenomena, models, or investigations
3.1(B) use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
3.1(C) demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards
3.1(D) use tools, including hand lenses; metric rulers; Celsius thermometers; wind vanes; rain gauges; graduated cylinders; beakers; digital scales; hot plates; meter sticks; magnets; notebooks; Sun, Earth, Moon system models; timing devices; materials to support observation of habitats of organisms such as terrariums, aquariums, and collecting nets; and materials to support digital data collection such as computers, tablets, and cameras, to observe, measure, test, and analyze information
3.1(E) collect observations and measurements as evidence
3.1(F) construct appropriate graphic organizers to collect data, including tables, bar graphs, line graphs, tree maps, concept maps, Venn diagrams, flow charts or sequence maps, and input-output tables that show cause and effect
3.2(D) evaluate a design or object using criteria
3.5(A) identify and use patterns to explain scientific phenomena or to design solutions

Properties of Matter

3.6 **Matter and energy.** The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used.

Readiness Standards	Supporting Standards
3.6(A) measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float in water	3.6(B) describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a definite shape and that liquids and gases take the shape of their container
3.6(C)* predict, observe, and record changes in the state of matter caused by heating or cooling in a variety of substances such as ice becoming liquid water, condensation forming on the outside of a glass, or liquid water being heated to the point of becoming water vapor (gas)	3.6(D) demonstrate that materials can be combined based on their physical properties to create or modify objects such as building a tower or adding clay to sand to make a stronger brick and justify the selection of materials based on their physical properties

Force and Motion

3.7 **Force, motion, and energy.** The student knows the nature of forces and the patterns of their interactions.

Readiness Standards	Supporting Standards
3.7(A)* demonstrate and describe forces acting on an object in contact or at a distance, including magnetism, gravity, and pushes and pulls	
3.7(B)* plan and conduct a descriptive investigation to demonstrate and explain how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons	

Energy

3.8 **Force, motion, and energy.** The student knows that energy is everywhere and can be observed in cycles, patterns, and systems.

Readiness Standards	Supporting Standards
3.8(A) identify everyday examples of energy, including light, sound, thermal, and mechanical	3.8(B) plan and conduct investigations that demonstrate how the speed of an object is related to its mechanical energy

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Space

3.9 Earth and space. The student knows there are recognizable objects and patterns in Earth's solar system.

Readiness Standards	Supporting Standards
3.9(B)* identify the order of the planets in Earth's solar system in relation to the Sun	3.9(A) construct models and explain the orbits of the Sun, Earth, and Moon in relation to each other

Earth's Processes

3.10 Earth and space. The student knows that there are recognizable processes that change Earth over time.

3.10(B) investigate and explain how soils such as sand and clay are formed by weathering of rock and by decomposition of plant and animal remains 3.10(C)* model and describe rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides	3.10(A) compare and describe day-to-day weather in different locations at the same time, including air temperature, wind direction, and precipitation

Earth's Resources

3.11 Earth and space. The student understands how natural resources are important and can be managed.

3.11(A) explore and explain how humans use natural resources such as in construction, in agriculture, in transportation, and to make products	3.11(B) explain why the conservation of natural resources is important 3.11(C) identify ways to conserve natural resources through reducing, reusing, or recycling

Organisms and Environments

3.12 Organisms and environments. The student describes patterns, cycles, systems, and relationships within environments.

3.12(B)* identify and describe the flow of energy in a food chain and predict how changes in a food chain such as removal of frogs from a pond or bees from a field affect the ecosystem 3.12(D)* identify fossils as evidence of past living organisms and environments, including common Texas fossils	3.12(A) explain how temperature and precipitation affect animal growth and behavior through migration and hibernation and plant responses through dormancy 3.12(C) describe how natural changes to the environment such as floods and droughts cause some organisms to thrive and others to perish or move to new locations

Structure, Function, and Survival

3.13 Organisms and environments. The student knows that organisms undergo similar life processes and have structures that function to help them survive within their environments.

	3.13(A) explore and explain how external structures and functions of animals such as the neck of a giraffe or webbed feet on a duck enable them to survive in their environment 3.13(B) explore, illustrate, and compare life cycles in organisms such as beetles, crickets, radishes, or lima beans

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Process Standards (Scientific and Engineering Practices/Recurring Themes and Concepts)	
3.1	**Scientific and engineering practices.** The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models.
3.2	**Scientific and engineering practices.** The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs.
3.3	**Scientific and engineering practices.** The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions.
3.4	**Scientific and engineering practices.** The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society.
3.5	**Recurring themes and concepts.** The student understands that recurring themes and concepts provide a framework for making connections across disciplines.

Ways to Show	
3.1(G)	develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem
3.2(A)	identify advantages and limitations of models such as their size, scale, properties, and materials
3.2(B)	analyze data by identifying any significant features, patterns, or sources of error
3.2(C)	use mathematical calculations to compare patterns and relationships
3.3(A)	develop explanations and propose solutions supported by data and models
3.3(B)	communicate explanations and solutions individually and collaboratively in a variety of settings and formats
3.3(C)	listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion
3.4(A)	explain how scientific discoveries and innovative solutions to problems impact science and society
3.4(B)	research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers
3.5(A)	identify and use patterns to explain scientific phenomena or to design solutions
3.5(B)	identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems
3.5(C)	use scale, proportion, and quantity to describe, compare, or model different systems
3.5(D)	examine and model the parts of a system and their interdependence in the function of the system
3.5(E)	investigate how energy flows and matter cycles through systems and how matter is conserved
3.5(F)	explain the relationship between the structure and function of objects, organisms, and systems
3.5(G)	explain how factors or conditions impact stability and change in objects, organisms, and systems

NOTE: The classification of standards on this Snapshot represents the reviewed and synthesized input of a sample of Texas Science educators. This Snapshot DOES NOT represent a publication of the Texas Education Agency. District curriculum materials may reflect other classifications.

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