Texas Essential Knowledge and Skills for Science, Grade 1

		Student Materials	Teacher Materials
(1) Scientific and engineering practices. The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:	**(A)** ask questions and define problems based on observations or information from text, phenomena, models, or investigations	**Student Edition:** 12–14, 101, 183, 186 **Hands-On Investigations:** Watch Your Water; Resources All Around	**Teacher Edition:** 3E, 8, 104B, 162B, 169D, 172A
	(B) use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems	**Student Edition:** 12, 16, 54, 166, 186, 241 **All Hands-On Investigations**	**Teacher Edition:** 3E, 8, 14B, 79E, 101E, 104A, 104B, 162B
	(C) identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards	**Student Edition:** 10–11, 22 **Hands-On Investigations:** Change the Chocolate; Butter Up; Zoom In on Soil; Go with the Flow; Spot the Resources; Resources All Around; Weather Information	**Teacher Edition:** 8, 50A, 50B, 60A, 60B, 116B, 150A, 150B, 225D
	(D) use tools, including hand lenses, goggles, heat-resistant gloves, trays, cups, bowls, beakers, sieves/sifters, tweezers, primary balance, notebooks, terrariums, aquariums, stream tables, soil samples (loam, sand, gravel, rocks, and clay), seeds, plants, windsock, pinwheel, student thermometer, demonstration thermometer, rain gauge, straws, ribbons, non-standard measuring items, flashlights, sandpaper, wax paper, items that are magnetic, non-magnetic items, a variety of magnets, hot plate, aluminum foil, Sun-Moon-Earth model, and plant and animal life cycle models to observe, measure, test, and compare	**Student Edition:** 42, 44, 46, 196 **All Hands-On Investigations**	**Teacher Edition:** 3N, 8, 10B, 40A, 44, 60A, 60B, 82A, 82B, 113E, 116B, 150A, 150B, 191E, 272B
	(E) collect observations and measurements as evidence	**Student Edition:** 11, 15, 30, 36, 42–44, 85, 100, 108, 110, 118–120, 122, 129, 134, 141, 144, 153, 158, 164–165, 168, 183, 186, 188, 197, 222, 244 **Hands-On Investigations:** Magnet Investigation; Super Sorters; Size Surprise; Pieces and Parts; Change the Chocolate; Hello, Heat; Butter Up; Marble Motion; Move the Car; Zoom In on Soil; What a Water-full World; Go with the Flow; Spot the Resources; Resources All Around; Wash Dishes; Weather Information; Seasons-Go-Round	**Teacher Edition:** 8, 10B, 47E, 72A, 72B, 92A, 92B, 126B, 135E, 147E, 150A, 150B, 169E, 179E, 182A, 182B, 191E, 194A, 194B, 203E, 206A, 206B, 218B, 222, 237E, 256, 259E, 262B, 269E, 272B
	(F) record and organize data using pictures, numbers, words, symbols, and simple graphs	**Student Edition:** 6, 11, 16, 75, 108, 126, 165, 173, 197, 210, 222, 234, 256 **Hands-On Investigations:** Weather Information; Magnet Investigation; Super Sorters; Size Surprise; Pieces and Parts; Change the Chocolate; Hello, Heat; Butter Up; Marble Motion; Move the Car; Zoom In on Soil; What a Water-full World; Resources All Around; Watch Your Water; Wash Dishes; Weather Information; Chain Connections	**Teacher Edition:** 8, 25E, 28A, 28B, 37E, 40A, 72A, 72B, 89E, 92A, 92B, 113E, 126B, 135E, 147E, 172A, 172B, 194A, 194B, 218B, 222, 228A, 228B, 252A, 252B, 272B
	(G) develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem	**Student Edition:** 14–15, 17, 44–45, 54–57, 62, 75–77, 86–87, 99, 121, 133, 141–143, 145, 166–167, 173, 176, 186, 206–207, 222–223, 235, 241, 244–245, 274 **Hands-On Investigations:** Track Time; Pieces and Parts; Go with the Flow; Resources All Around; Wash Dishes; Seasons-Go-Round; Chain Connections	**Teacher Edition:** 3N, 8, 14B, 17, 25E, 50A, 50B, 54, 57E, 69E, 123E, 135E, 138A, 138B, 159E, 162B, 169E, 186, 191E, 225E, 228A, 228B, 240, 240B, 249E

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		Student Materials	**Teacher Materials**
(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:	**(A)** identify basic advantages and limitations of models such as their size, properties, and materials	**Student Edition:** 54 **Simulations:** Aquarium; Life Cycle: Fish, Bird, Mammal **Hands-On Investigations:** Magnet Investigation; Pieces and Parts; Go with the Flow; Seasons-Go-Round; Resources All Around	**Teacher Edition:** 17, 47E, 123E, 138, 240, 240B, 249E
	(B) analyze data by identifying any significant features and patterns	**Student Edition:** 11, 120, 173, 197, 210 **Hands-On Investigations:** Zoom In on Soil; Watch Your Water; Wash Dishes; Seasons-Go-Round	**Teacher Edition:** 120, 172A, 172B, 206A, 206B, 210, 237E
	(C) use mathematical concepts to compare two objects with common attributes	**Student Edition:** 36, 42–44, 46 **Hands-On Investigations:** Super Sorters; Size Surprise	**Teacher Edition:** 40A
	(D) evaluate a design or object using criteria to determine if it works as intended	**Student Edition:** 11–13 **Hands-On Investigations:** Track Time; Resources All Around	**Teacher Edition:** 3E, 14B, 47E
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:	**(A)** develop explanations and propose solutions supported by data and models; Breakouts	**Student Edition:** 11–12, 17, 55–56, 66, 83, 86, 120, 122, 141, 166, 183, 186, 197, 210, 242, 244, 256, 274 **Hands-On Investigations:** Magnet Investigation; Track Time; Pieces and Parts; Change the Chocolate; Zoom In on Soil; Go with the Flow; Wash Dishes	**Teacher Edition:** 28A, 28B, 50A, 50B, 69E, 79E, 86, 138A, 138B, 182A, 182B, 225E
	(B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats	**Student Edition:** 6, 11–12, 17–18, 21, 23, 30, 34–36, 42–46, 51, 53–56, 64–66, 75–78, 85–88, 94, 98–100, 108–110, 118, 120–122, 129, 132–134, 141–144, 153–158, 164–168, 173, 183, 186–188, 195, 197, 200–202, 207, 211–212, 221–224, 231, 234–236, 242, 244–246, 254, 257, 258, 265–268, 278–279, 280, **All Hands-On Investigations**	**Teacher Edition:** 3N, 25E, 37E, 47E, 57E, 69E, 79E, 82A, 82B, 89E, 113E, 147E, 159E, 169E, 179E, 191E, 215E, 225D, 225E, 249E, 259E, 269E
	(C) listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion	**Student Edition:** 31, 42, 62–63, 95, 118, 128, 195, 254 **Hands-On Investigations:** Super Sorters; Size Surprise; Pieces and Parts; Change the Chocolate; Hello, Heat; Marble Motion; Move the Car; Go with the Flow; Weather Information; Classify Things	**Teacher Edition:** 28A, 28B, 79E, 101E, 147E, 159E, 169E, 203E, 237E, 249E, 252A, 252B, 259E, 269E
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society. The student is expected to:	**(A)** explain how science or an innovation can help others	**Student Edition:** 12–14, 17–18, 21, 32–34, 46, 54, 73, 75, 86, 120, 142, 198–200 **Hands-On Investigations:** Hello, Heat	**Teacher Edition:** 3E, 179E
	(B) identify scientists and engineers such as Katherine Johnson, Sally Ride, and Ernest Just and explore what different scientists and engineers do	**Student Edition:** 4–6, 8, 12, 16, 18, 22, 32–34, 96–98, 130–132, 154–156, 232–234, 276–279	**Teacher Edition:** 4–6, 8, 12, 16, 18, 22, 32–34, 96–98, 130–132, 154–156, 232–234, 276–279

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		Student Materials	Teacher Materials
(5) Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to:	**(A)** identify and use patterns to describe phenomena or design solutions	**Student Edition:** 16, 19, 36, 206–212, 218–224, 236, 246, 262–265, 267–268 **Simulation: Life Cycle:** Fish, Bird, Mammal **Hands-On Investigation:** Change the Chocolate	**Teacher Edition:** 29–30, 79E, 118, 128, 203E, 208, 259E, 260, 264, 274
	(B) investigate and predict cause-and-effect relationships in science	**Student Edition:** 19, 66, 86, 100, 108, 110, 174–175, 178, 182–186, 188, 194–196, 202, 208–209 **Hands-On Investigations:** Butter Up; Marble Motion; Move the Car; Go with the Flow; Spot the Resources	**Teacher Edition:** 62–64, 84, 86, 89E, 94, 101E, 106, 108, 140, 174, 184, 196, 230
	(C) describe the properties of objects in terms of relative size (scale) and relative quantity	**Student Edition:** 19, 40–43, 45–46, 122, 126–127–129, 133–134, 197 **Hands-On Investigations:** Wash Dishes; Weather Information	**Teacher Edition:** 41–42
	(D) examine the parts of a whole to define or model a system	**Student Edition:** 20, 50–56, 128, 176, 228–231, 235–236, 240–246, 252–258 **Hands-On Investigation:** Clues in Animal Parts	**Teacher Edition:** 242
	(E) identify forms of energy and properties of matter	**Student Edition:** 20, 28–31, 35–36, 40–46, 60–66, 70–72, 76–78, 82–88, 92–95, 99–100, 104–110, 116–119, 122, 126–129, 133–134 **Hands-On Investigations:** Change the Chocolate; Hello, Heat; Butter Up	**Teacher Edition:** 74
	(F) describe the relationship between structure and function of objects, organisms, and systems	**Student Edition:** 11, 17, 20, 120, 138–144, 150, 152–153, 162–163–168, 252–258 **Hands-On Investigation:** Clues in Animal Parts	**Teacher Edition:** 152, 164, 254
	(G) describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same	**Student Edition:** 20, 60–66, 72–76, 78, 82–88, 92–95, 99–100, 104–110, 138–144, 174, 206–209, 272–275, 279–280 **Simulation: Life Cycle:** Fish, Bird, Mammal	**Teacher Edition:** 20, 60–66, 72–76, 78, 82–88, 92–95, 99–100, 104–110, 138–144, 174, 206–209, 272–275, 279–280
(6) Matter and its properties. The student knows that objects have physical properties that determine how they are described and classified. The student is expected to:	**(A)** classify objects by observable physical properties, including, shape, color, and texture, and attributes such as larger and smaller and heavier and lighter	**Student Edition:** 28–31, 34–36, 38–46 **Hands-On Investigation:** Super Sorters	**Teacher Edition:** 23H
	(B) explain and predict changes in materials caused by heating and cooling	**Student Edition:** 60–66 **Hands-On Investigation:** Change the Chocolate	**Teacher Edition:** 169D
	(C) demonstrate and explain that a whole object is a system made of organized parts such as a toy that can be taken apart and put back together	**Student Edition:** 26, 50–56 **Simulations:** **Hands-On Investigation:** Pieces and Parts	**Teacher Edition:** 26, 50–56
(7) Force, motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to:	**(A)** explain how pushes and pulls can start, stop, or change the speed or direction of an object's motion	**Student Edition:** 92–95, 98–100 **Hands-On Investigation:** Marble Motion	**Teacher Edition:** 67H
	(B) plan and conduct a descriptive investigation that predicts how pushes and pulls can start, stop, or change the speed or direction of an object's motion	**Student Edition:** 104–108 **Hands-On Investigation:** Move the Car	**Teacher Edition:** 108
(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in everyday life. The student is expected to:	**(A)** investigate and describe applications of heat in everyday life such as cooking food or using a clothes dryer	**Student Edition:** 72–78 **Hands-On Investigations:** Hello, Heat	**Teacher Edition:** 72–78
	(B) describe how some changes caused by heat may be reversed such as melting butter and other changes cannot be reversed such as cooking an egg or baking a cake	**Student Edition:** 82–85, 87–88 **Hands-On Investigation:** Butter Up	**Teacher Edition:** 82–85, 87–88

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		Student Materials	**Teacher Materials**
(9) Earth and space. The student knows that the natural world has recognizable patterns. The student is expected to describe and predict the patterns of seasons of the year such as order of occurrence and changes in nature:	**(A)** describe and predict the patterns of seasons of the year such as order of occurrence and changes in nature	**Student Edition:** 206–207, 210, 212 **Hands-On Investigation:** Seasons-Go-Round	**Teacher Edition:** 206–207, 210, 212
(10) Earth and space. The student knows that the natural world includes earth materials that can be observed in systems and processes. The student is expected to:	**(A)** investigate and document the properties of particle size, shape, texture, and color and the components of different types of soils such as topsoil, clay, and sand	**Student Edition:** 116–122, 206–207, 210, 212 **Hands-On Investigation:** Zoom In on Soil	**Teacher Edition:** 116–122, 206–207, 210, 212
	(B) investigate and describe how water can move rock and soil particles from one place to another	**Student Edition:** 138–144, 206–210, 212 **Hands-On Investigation:** Go with the Flow	**Teacher Edition:** 138–144, 206–210, 212
	(C) compare the properties of puddles, ponds, streams, rivers, lakes, and oceans, including color, clarity, size, shape, and whether it is freshwater or saltwater	**Student Edition:** 126–129, 133–134, 206–207, 210, 212 **Hands-On Investigation:** What a Water-full World	**Teacher Edition:** 126–129, 133–134, 206–207, 210, 212
	(D) describe and record observable characteristics of weather, including hot or cold, clear or cloudy, calm or windy, and rainy or icy, and explain the impact of weather on daily choices	**Student Edition:** 194–197, 202, 206–210, 212 **Hands-On Investigation:** Weather Information	**Teacher Edition:** 189H
(11) Earth and space. The student knows that earth materials and products made from these materials are important to everyday life. The student is expected to:	**(A)** identify and describe how plants, animals, and humans use rocks, soil, and water	**Student Edition:** 148–158, 162–168, 172, 175 206–207, 210, 112 **Hands-On Investigations:** Spot the Resources; Resources All Around; Watch Your Water	**Teacher Edition:** 148–158, 162–168, 172, 175 206–207, 210, 112
	(B) explain why water conservation is important	**Student Edition:** 172–175 **Hands-On Investigation:** Watch Your Water	**Teacher Edition:** 145H
	(C) describe ways to conserve water such as turning off the faucet when brushing teeth and protect natural sources of water such as keeping trash out of bodies of water	**Student Edition:** 172–173, 182–188 **Hands-On Investigation:** Wash Dishes	**Teacher Edition:** : 172–173, 182–188
(12) Organisms and environments. The student knows that the environment is composed of relationships between living organisms and nonliving components. The student is expected to:	**(A)** classify living and nonliving things based upon whether they have basic needs and produce young	**Student Edition:** 218–224 **Hands-On Investigation:** Classify Things	**Teacher Edition:** 218–224
	(B) describe and record examples of interactions and dependence between living and nonliving components in terrariums or aquariums	**Student Edition:** 228–231, 235–236 **Simulation:** Aquarium Gazing	**Teacher Edition:** 228–231, 235–236
	(C) identify and illustrate how living organisms depend on each other through food chains	**Student Edition:** 240–246 **Hands-On Investigation:** Chain Connections	**Teacher Edition:** 240–246
(13) Organisms and environments. The student knows that organisms resemble their parents and have structures and undergo processes that help them interact and survive within their environments. The student is expected to:	**(A)** identify the external structures of different animals and compare how those structures help different animals live, move, and meet basic needs for survival	**Student Edition:** 252–258 **Hands-On Investigation:** Clues in Animal Parts	**Teacher Edition:** 247H
	(B) record observations of and describe basic life cycles of animals, including a bird, a mammal, and a fish	**Student Edition:** 272–274, 278–280 **Simulation:** Life Cycle: Fish, Bird, Mammal	**Teacher Edition:** 272–274, 278–280
	(C) compare ways that young animals resemble their parents	**Student Edition:** 263–268 **Hands-On Investigation:** Match Parent and Young	**Teacher Edition:** 263–268