


3rd Grade - Elementary Science Bundle # 10

Title	Suggested Dates
Matter	 3/22/10 – 4/16/10 (19 days)

Big Idea/Enduring Understanding	Guiding Questions
Matter has physical properties.	What are the measurable physical properties of an object? How is matter classified? How does matter change? Why does matter change?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
<p>NEW TEKS: 3.5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p> <p>3.5a measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float</p> <p>CURRENT TEKS 3.7 Science concepts. The student knows that matter has physical properties. 3.7a gather information including temperature, magnetism, hardness, and mass using appropriate tools to identify physical properties of matter</p>	<p style="color: red;">Gather information using appropriate tools including senses to identify physical properties of matter. Use a variety of types of matter</p> <p style="color: red;">Including</p> <ul style="list-style-type: none"> • Temperature (Celsius (although you cover Fahrenheit in Math)) • Magnetism • Hardness (relative hardness) • Mass (explain mass versus weight), Volume, Size (linear and volumetric) • magnetism • ability to sink or float • Color, shape, luster, odor, state of matter • Use compass to gather information on direction • Use hand lenses to gather information from a magnified perspective • Define physical properties of matter as those things that can be observed with the senses or measured with appropriate tools. <p style="color: red;">Use appropriate tools to measure the above (reference 3.4A)</p> <p style="color: red;">temperature mass magnetism ability to sink or float</p>	<p>Resources listed here apply to the entire bundle.</p> <p>Science Notebooks</p> <p>IF I TRY (Intranet)</p> <p>KLEW/ Claims & Evidence</p> <p>PISD Elem Science Homepage</p> <p>PISD K-5 Equipment Alignment</p> <p style="background-color: yellow; text-align: center;">REQUIRED SIGNATURE LESSON</p> <p>Bridging II TAKS – Matter “Using Tools to Explore Matter: “Matter and Magnetism” Master copy of lesson can be found in every school library; every campus has the kit</p> <p>www.FossWeb.com Matter and Energy Module 3 Duplication Masters</p>

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<p>NEW TEKS: 3.5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p> <p>3.5b 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</p> <p>CURRENT TEKS 3.7 Science concepts. The student knows that matter has physical properties. 3.7b identify matter as liquids, solids, and gases</p>	<p>States of matter (characteristics of each state – regardless of example)</p> <ul style="list-style-type: none"> ○ Solid <ul style="list-style-type: none"> ▪ Molecule location / action (such as ice) ▪ Maintains own shape when moved from one container to another ○ Liquid <ul style="list-style-type: none"> ▪ Molecule location / action (such as water) ▪ Flows, maintains volume but takes shape of container ○ Gas <ul style="list-style-type: none"> ▪ Molecule location / action (such as water vapor) ▪ Moves freely, takes shape and volume of container <p>Review water cycle to discuss differences in states of matter.</p> <p>TEACHER NOTE: To show the energy of the molecules of each state of matter, teacher could have students move into an organized stationary pattern to show a solid, a loose flowing moving group to show a liquid, and a higher energy group to show the gas molecules.</p>	<p>TAKSscopes Classifying Matter</p> <ul style="list-style-type: none"> • Explore activity can be completed in Bundle 11 <p>AIMS 3rd Grade Texas Core Curriculum Physical Science Book “Spheres on a Roll” “Making Sense of Solids” “Looking at Liquids” “Gas Stations” “Can It Matter?” “Mystery Matter”</p> <p>BrainPop Jr. Matter: Changing States of Matter Matter: Solids, Liquids and Gases</p>
<p>NEW TEKS: 3.5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p> <p>3.5c predict, observe, and record changes in the state of matter caused by heating or cooling</p>	<p>Students need to be actively involved in the process of changing materials through the addition or removal of heat energy. This process should connect back to states of matter and how energy creates change (such as change of state)</p>	<p>Elementary Science with Vernier: “I’m Melting! Water Changes States” 14 Solid, Liquid, Gas: Water Can Do It All” 15</p> <p>www.FossWeb.com Matter and Energy Module 4 Duplication Masters</p> <p>AIMS 3rd Grade Texas Core Curriculum Physical Science Book “Evening Out Temperatures” “Salt Minds”</p>
<p>NEW TEKS: 3.5 Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used.</p> <p>3.5d explore and recognize that a mixture is created when two materials are combined such as gravel and sand and metal and plastic paper clips</p>	<p>This is a new TEK for 3rd Grade Begin by looking at the physical properties of each material before and after the mixture is created.</p> <p>Find or create examples of two observable materials that are combined. ie: Snacks: Chex Mix, Trail Mix Soil Water and Ice Sand and Metal Materials on next page Items in a Trash Can</p>	<p>www.unitedstreaming.com Mixtures: Mixing Matter</p>
<p>NEW TEKS: 3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor</p>	<p>No tasting or touching unless instructed Safe smelling – wafting Goggles</p>	

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<p>investigations following home and school safety procedures and uses environmentally appropriate practices.</p> <p>3.1a demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat</p> <p>CURRENT TEKS 3.1 Scientific processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices. 3.1a demonstrate safe practices during field and laboratory investigations</p>	<p>Wait for teacher directions No glassware Students do not handle hot water, hot plates or burners. Washing hands after science activities</p> <p>Review investigation safety procedures [directly point out precautions, possible safety risks, specific guidelines for the lesson] for both indoor and outdoor activities, as applicable. In addition, encourage students to identify these on their own throughout the year [document in science notebooks via words and/or pictures]</p>	
<p>NEW TEKS: 3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate practices.</p> <p>3.1b make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics</p> <p>CURRENT TEKS 3.1 Scientific processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices. 3.1b make wise choices in the use and conservation of resources and the disposal or recycling of materials</p>	<p>Proper handling of materials: Return natural materials to the proper area of environment</p> <p>No tasting or touching unless instructed Safe smelling – wafting Goggles Wait for teacher directions No glassware Students do not handle hot water, hot plates or burners. Washing hands after science activities</p> <p>Review investigation safety procedures [directly point out precautions, possible safety risks, specific guidelines for the lesson] for both indoor and outdoor activities, as applicable. In addition, encourage students to identify these on their own throughout the year [document in science notebooks via words and/or pictures]</p>	<p>PISD Safety Website -Safety Contracts, games, etc -Science Safety is Elementary (for teachers) -Safety in the Elementary Classroom (for teachers)</p> <p>DuPont Science Safety Zone website</p> <p>Texas Science Safety Standards</p>
<p>NEW TEKS: 3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.</p> <p>3.2a plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a particular problem in the natural world</p>	<p>These should be guided by / modeled by, and conducted as a group rather than independently.</p> <p>Teacher model the investigative / decision making process using the Think-Aloud technique</p> <p>The New TEKS do not hold students accountable for “experimental” investigations in 3rd grade, so they do not need to learn the specific terms of the Scientific Method, such as “hypothesis”, although the teacher can use them during investigations to introduce/model the</p>	

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<p>CURRENT TEKS 3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations. 3.2a plan and implement descriptive and simple experimental investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology</p>	<p>vocabulary.</p> <p>Formal and informal terms in all areas of science should be used interchangeably for exposure.</p> <p>The emphasis in all types of investigations is the <u>systematic approach</u> used: students form questions or define a problem and develop a plan to answer their question or solve the problem using appropriate tools to implement the plan.</p> <p>Develop questions using resources such as Science Notebooks, KLEW charts and students sharing with one another</p> <p>EX: How does a change in temperature affect mass or other properties of these materials? Does heating water change its mass?</p> <p>Class discussion is a critical element to allow students to elaborate and build understanding</p> <p>Record their ideas, the process and discussion points in Science Notebooks</p>	
<p>NEW TEKS: 3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations. 3.2b collect data by observing and measuring using the metric system and recognize differences between observed and measured data</p> <p>CURRENT TEKS 3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations. 3.2b collect information by observing and measuring</p>	<p>Connections: Math TEK 3.11a: linear measurement using standard units (Metric) Math TEK 3.12 measure temperature using a thermometer (Celsius)</p> <p>Also include the following measurements to the nearest whole number: Mass (g.) using double pan balance with gram masses Volume (ml.) using beakers and/or graduated cylinders</p> <p>Predict mass based on characteristics they see – which material “looks” heavier. Put materials in order from predicted lightest to heaviest – then test the prediction by finding the mass of each sample. This can be comparative mass – comparing samples on the double pan balance.</p>	
<p>NEW TEKS: 3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations. 3.2d analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations</p> <p>CURRENT TEKS 3.2 Scientific processes. The student uses scientific</p>	<ul style="list-style-type: none"> • Student generated explanations with justifications of reasoning. • This can be whole group, small group, partners or individuals • Both verbal and written in Science Notebook <p>The KLEW format is a graphic organizer that allows students to record learning pieces and show the connection to evidence</p>	

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<p>methods during field and laboratory investigations. 3.2c analyze and interpret information to construct reasonable explanations from direct and indirect evidence</p>		
<p>NEW TEKS: 3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.</p> <p>3.2f communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion</p> <p>CURRENT TEKS 3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations. 3.2d communicate valid conclusions</p>	<p>Orally Written , and pictures in science notebook</p> <p>Discussion is important here as students compare results and make specific connections between the investigation – the concepts – and the supporting vocabulary</p> <p>Labeling of technical drawings, diagrams and pictures is a huge support for vocabulary development so that students will have a model to connect to the text</p>	
<p>NEW TEKS: 3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.</p> <p>3.2c construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data</p> <p>CURRENT TEKS 3.2 Scientific processes. The student uses scientific methods during field and laboratory investigations. 3.2e construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate information</p>	<p>Also connects to: Math TEKS 3.13a: Collect, organize, records, and display data in pictographs and bar graphs Math TEKS 3.15a: Explain and record observations using objects, words, pictures, numbers, and technology.</p> <p>Initial support for recording collected information should be more guided in the beginning of the year and move toward students making independent decisions on which type of graphic organizer to use as the year progresses.</p> <p>Use Science Notebook to build the skill of constructing ways to record data.</p>	

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<p>NEW TEKS: 3.3 Scientific investigation and reasoning. The student knows that information, critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions.</p> <p>3.3a in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations so as to encourage critical thinking by the student</p> <p>CURRENT TEKS 3.3 Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.</p> <p>3.3a analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.</p>	<p>Continue to support building understanding of using a <u>systematic approach</u> to solve a problem or answer a question</p> <p>The key here is to support students as they observe the world and the results of their investigations and build their critical thinking by looking at those results as evidence that supports a concept.</p> <p>Use the KLEW graphic organizer to support this process.</p> <p>Use reflective discussions to develop and answer questions about the scientific concepts studied: EX of Critical Questioning:</p> <p>Student should use and reference their Science Notebooks and one another</p>	
<p>NEW TEKS: 3.3 Scientific investigation and reasoning. The student knows that information, critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions.</p> <p>3.3c represent the natural world using models such as volcanoes or Sun, Earth, and Moon system and identify their limitations, including size, properties, and materials</p> <p>CURRENT TEKS 3.3 Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.</p> <p>3.3c represent the natural world using models and identify their limitations</p>	<p>For every model used during the year, ask the following questions:</p> <ul style="list-style-type: none"> • What is the model for? • What do the parts of the model represent? • How is the model the same as its target – the real thing? • How is the model different from its target – the real thing? • How well does the model represent its target? What can it not show? (limitations) <p>Use different models of each concept target where each different model is designed to highlight a different important part of the overall concept. The questions allow you to focus on each part of each model so that when all those parts combine, a better mental model is created for students</p>	
<p>CURRENT TEKS 3.3 Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions.</p> <p>3.3d evaluate the impact of research on scientific</p>	<p>Consider this through each unit of the year...it is an open discussion. There is an opportunity during Bundle 12 to focus more directly on this S.E.</p>	

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<p>thought, society, and the environment</p> <p>NEW TEKS: 3.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry.</p> <p>3.4a collect, record, and analyze information using tools including microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, compasses, magnets, collecting nets, notebooks, sound recorders, and Sun, Earth, and Moon system models, timing devices including clocks and stopwatches and materials to support observation of habitats of organisms such as terrariums and aquariums</p> <p>3.4b use safety equipment as appropriate, including safety goggles and gloves</p> <p>CURRENT TEKS 3.4 Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry.</p> <p>3.4a collect and analyze information using tools including calculators, microscopes, cameras, safety goggles, sound recorders, clocks, computers, thermometers, hand lenses, meter sticks, rulers, balances, magnets, and compasses</p>	<p>Metric units of measurement only</p> <p>Double pan balance with and without weights, platform scale, beakers, graduated cylinders, hand lenses, magnets, notebooks</p> <p>Can include microscopes for further study.</p> <p>TEACHER NOTE: Teaching the proper use of tools should be scaffolded:</p> <ol style="list-style-type: none"> 1. Tools are modeled 2. Students are exposed through group interaction and then, 3. Individuals develop skills through multiple opportunities for practice during the year. <p>Tools and equipment, including senses, should be used in authentic learning settings including during an outside field investigation</p>	
<p>NEW TEKS: 3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations.</p> <p>3.2e demonstrate the repeated investigations may increase the reliability of results</p> <p>CURRENT TEKS 3.4 Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry.</p> <p>3.4b demonstrate that repeated investigations may increase the reliability of results</p>	<p>Repeated trials will not need to be done on every hands-on/ minds-on investigation during the year.</p> <p>There should be an opportunity to discuss or have a mini-lesson on the reason for repeating investigations during each bundle.</p> <p>It is good to remember that many demonstrations and investigations in science do not work in the classroom on a particular day – however, that is a great time to discuss repeating a test to get a more valid result – even if there is no time to actually try the demonstration or investigation again that day.</p>	