


1st Grade - Elementary Science Bundle # 9

Title	Suggested Dates
Physical Properties and How Heat Energy Affects Them	 2/22/10 – 3/12/10 (15 days)

Big Idea/Enduring Understanding	Guiding Questions
Objects can be sorted by their patterns and their properties. Properties can be changed by energy such as heat.	How does heat change different materials and objects? How can we classify different materials and objects?

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 1.5 Matter and Energy. The student knows that objects have properties and patterns.</p> <p>1.5a classify objects by observable properties of the materials from which they are made such as larger and smaller, heavier and lighter, shape, color, and texture</p> <p>CURRENT TEKS 1.5 The student knows that organisms, objects, and events have properties and patterns. 1.5a sort objects and events based on properties and patterns</p>	<p style="color: red;">Including larger and smaller, heavier and lighter, shape, color, and texture</p> <p style="color: red;">TEACHER NOTE: 1st grade does not teach “states of matter”. Through Pets Matter, students measure and explore physical properties of objects. In addition to Pets Matter, students should explore physical properties of a variety of items, both teacher supplied and student identified. The focus here is inquiry based; students begin to form foundational understandings of properties of different items (which we as adults know to be classified as solids, liquids, and gases). Students begin to recognize and group / sort these items based on the properties to construct their own understanding of a larger category. Only then are the “labels” applied (TEKS based in 3rd grade). Knowing states of matter as solid, liquid, and gas are not 1st grade TEKS...understanding properties and how those relate to something being solid, or being a certain way is key.</p> <p>Items to consider: water, ice, birthday candles, thin plastic, marshmallows (when used explicitly and identified with detail (melting, etc) in lesson plans, hot glue, etc.</p>	<p>The resources apply, as applicable, throughout 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;">REQUIRED SIGNATURE LESSON</p> <p>Bridging to TAKS – Matter, “Pets Matter” (note: This should lead off) Master copy of the lesson is found in each campus library. Every campus has the kit.</p> <p>TAKScopes.com Scope: 1.7b Changes from Heat</p> <p>BrainPopJr “Heat”</p> <p>United Streaming Blue Dragon, The: Changing Things Properties of Matter Part 1</p>
<p>CURRENT TEKS 1.7 The student knows that many types of change occur. 1.7a observe, measure, record changes in size, mass, color, position, quantity, sound, and movement</p>	<p style="color: red;">Including</p> <ul style="list-style-type: none"> • Temperature – hotter/colder. Warmer/cooler <p style="color: red;">TEACHER NOTE: Students apply heat to effect change in an item, such as an ice cube, and collect relative temperature data during the process to recognize change occurred and the patterns</p>	<p>BrainPopJr “Heat”</p> <p>United Streaming Blue Dragon, The: Changing Things Properties of Matter Part 1</p>

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<p>NEW TEKS 1.5 Matter and Energy. The student knows that objects have properties and patterns.</p> <p>1.5b predict and identify changes in materials caused by heating and cooling such as ice melting, water freezing, and water evaporating</p> <p>CURRENT TEKS 1.7 The student knows that many types of change occur. 1.7b identify and test ways that heat may cause change such as when ice melts</p>	<p>that emerge.</p> <p>Including</p> <ul style="list-style-type: none"> • Changes in a thermometer (measurement of change) • Adding heat increases temperature • Removing heat decreases temperature • Adding heat can cause things to melt (ice, candy, ice cream, plastic, etc). Different objects need different amounts of heat energy to melt. **Melting does not mean it has to melt to a liquid state. Evidence of melting may be partial melting resulting in a morphed object. • Removing heat can cause things to be solid (ex: melted candle when cooled) <p>TEACHER NOTE: “Hot” is relative (opinion) and caused by ADDING heat and “cold” is relative (opinion) and caused by REMOVING heat. Focus on the changes that heat causes to each state of matter, not “states of matter” or “change of state”</p>	<p>FOSS - Solids and Liquids Delta Education www.fossweb.com Use Solids and Liquids Icon</p> <p><u>AIMS 1st Grade Texas Core Curriculum Physical Science Book</u> Icy Hot Changes and Cycles (Focus is how heat and pressure change things.)</p>
<p>NEW TEKS 1.2d - record and organize data using pictures, numbers, and words</p> <p>CURRENT TEKS 1.5 The student knows that organisms, objects, and events have properties and patterns. 1.5b identify, predict, and create patterns including those seen in charts, graphs, and numbers</p>	<p>Including those seen in:</p> <ul style="list-style-type: none"> • Charts • Graphs • Numbers (temperature) <p>TEACHER NOTE: 1st grade looks at BAR-LIKE graphs and data charts (using blocks, pictures, etc) as well as building from Kinder using real objects and pictures of objects. See MATH TEKS</p>	
<p>NEW TEKS 1.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and uses environmentally appropriate and responsible practices.</p> <p>1.1a recognize and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations including wearing safety goggles, washing hands, and using materials appropriately</p> <p>1.1b recognize the importance of safe practices to keep self and others safe and healthy</p> <p>1.1c identify and learn how to use natural resources and materials, including conservation and reuse or recycling of paper, plastic, and metals</p>	<p>No tasting or touching unless instructed Safe smelling – wafting Goggles Wait for teacher directions No glassware Washing hands after science activities</p> <p>Students do not handle hot water, hot plates or burners.</p> <p>Hot plates need to be Scholar Safety Hot Plates (not coil hot plates).</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>

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<p>CURRENT TEKS 1.1 Conducts classroom and field investigations following home and school safety procedures. 1.1a demonstrate safe practices during classroom and field investigations 1.1b learn how to use and conserve resources and materials</p>		
<p>NEW TEKS: 1.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations. 1.2a ask questions about organisms, objects, and events observed in the natural world</p> <p>CURRENT TEKS 1.2 Develops abilities necessary to do scientific inquiry in the field and in the classroom. 1.2a ask questions about organisms, objects, and events</p>	<p>Teacher guide and model the process using the Think-Aloud technique</p> <p>Variety of question types should be explored: closed and open ended</p> <p>Develop questions using resources such as Science Notebooks, KLEW charts and students sharing with one another</p> <ul style="list-style-type: none"> • Should primarily be oral – model writing • Conduct as a group rather than independently <p>EX: “Which object would melt faster?” (student then observes and documents verbally and through notebook)</p>	
<p>NEW TEKS: 1.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations. 1.2b plan and conduct simple descriptive investigations such as ways objects move</p> <p>CURRENT TEKS 1.2 Develops abilities necessary to do scientific inquiry in the field and in the classroom. 1.2b plan and conduct simple descriptive investigations</p>	<p>Should occur both indoors and outdoors.</p> <p>Students are not held accountable for Scientific Method and do not need to know the terms, although teachers can use them interchangeably.</p> <p>Formal and informal terms in all areas of science should be used interchangeably for exposure.</p> <p>Teacher explicitly model the relationship between the question and the materials and steps used in the investigation: EX: Question on which rock weighs more –</p> <ul style="list-style-type: none"> • Materials – need the rocks and a tool to compare their weight • Steps – show the order of steps used in comparing the rocks on the balance • Model writing the materials and steps on a chart <p>Whole group setting: As the year progresses, facilitate students in helping choose the materials, tools and steps they would take to answer their questions</p>	
<p>NEW TEKS 1.2 Scientific investigation and reasoning. The student</p>	<p>Tools and equipment, including senses, should be used in authentic learning settings including outside field investigations</p>	

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<p>develops abilities to ask questions and seek answers in classroom and outdoor investigations.</p> <p>1.2c collect data and make observations using simple equipment such as hand lenses, primary balances, and non-standard measurement tools</p> <p>CURRENT TEKS 1.2 Develops abilities necessary to do scientific inquiry in the field and in the classroom. 1.2c gather information using simple equipment and tools to extend the senses</p>	<p>Teacher model student recording of data (pictures, words)</p> <ul style="list-style-type: none"> • Create a big book of the science notebook to model recording <ul style="list-style-type: none"> ○ Investigation steps ○ Materials ○ Ideas <p>Support students as they move from initially copying compiled information into making their own authentic entries into their notebooks</p>	
<p>NEW TEKS: 1.2 Scientific investigation and reasoning. The student develops abilities to ask questions and seek answers in classroom and outdoor investigations.</p> <p>1.2d record and organize data using pictures, numbers, and words</p> <p>1.2e communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations</p> <p>CURRENT TEKS 1.2 Develops abilities necessary to do scientific inquiry in the field and in the classroom. 1.2d construct reasonable explanations and draw conclusions 1.2e communicate explanations about investigations</p>	<p>Communicate both verbally and in science notebook (pictures, words, copying information from class discussion and teacher modeled big book science notebook entry)</p> <p>Mini-lessons can be used to model specific graphic organizers as they are needed. Students begin to record into their science notebooks by copying and authentic entries</p> <p>Can use KLEW charts to model connections between What they LEARNED – and the EVIDENCE for what they learned – or what was observed that supports their new ideas</p> <p>Encourage students to always support their ideas with evidence – from activities, observations, reading, etc.</p>	
<p>NEW TEKS: 1.3 Scientific investigation and reasoning. The student knows that information and critical thinking are used in scientific problem solving.</p> <p>1.3a identify and explain a problem such as finding a home for a classroom pet and propose a solution in his/her own words</p> <p>CURRENT TEKS 1.3 Knows that information and critical thinking are used in making decisions. 1.3a make decisions using information 1.3b discuss and justify the merits of decisions 1.3c explain a problem in his/her own words and identify a</p>	<p>Introduce the fact that you can solve a problem or answer a question <u>through a systematic approach</u></p> <p>Student should use and reference their Science Notebooks and one another</p> <p>Student entries should be their elaboration based on class discussion EX: “Should I touch something my teacher just melted?”</p> <p>Model using the Think-Aloud technique (processes and steps to decision-making)</p>	

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<p>task and solution related to the problem</p>		
<p>NEW TEKS 1.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world.</p> <p>1.4a collect, record, and compare information using tools, including cameras; computers; hand lenses; non-standard measuring items such as paper clips and clothespins, weather tools such as classroom demonstration thermometers and weather vanes; primary balances; cups; bowls, timing devices including clocks and timers; magnets; collecting nets; notebooks; materials to support observations of habitats of organisms such as aquariums and terrariums; and safety goggles</p> <p>CURRENT TEKS 1.4 Uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. 1.4a collect information using tools including hand lenses, clocks, computers, thermometers, and balances</p>	<p>Tools that support hands-on investigation must be taught (modeled and guided) and used. Focus on use and develop understanding for use of hand lens;</p> <p>Students gain enough experience to independently use hand lens when appropriate</p>	
<p>NEW TEKS 1.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world.</p> <p>1.4b measure and compare organisms and objects using non-standard units</p> <p>CURRENT TEKS 1.4 Uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. 1.4b record and compare collected information 1.4c measure organisms and objects and parts of organisms an objects, using non-standard units such as paperclips, hands, and pencils</p>		