2nd Grade - Elementary Science Bundle # 9

Title	Suggested Dates
Matter	2/22/10 – 3/12/10 (15 days)

Big Idea/Enduring Understanding	Guiding Questions
All matter has observable properties that can be measured and changed by energy.	How can heat change matter? Can we see evidence of heat energy? What properties lead you to conclude that something is solid or liquid?

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)
2.5 Matter and energy. The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used. **2.5a** classify matter by physical properties, including shape, relative mass, relative temperature, texture, flexibility, and whether material is a solid or liquid **2.5 Science concepts. The student knows that organisms, objects, and events have properties and patterns.** 2.5a classify and sequence organisms, objects, and events based on properties and patterns	Use a variety of materials ** Focus should more on the *properties* used to determine if something is solid or liquid, not whether it IS a solid or a liquid	Resources listed here apply to the entire bundle. Science Notebooks IF I TRY (Intranet) KLEW/ Claims & Evidence PISD Elem Science Homepage PISD K-5 Equipment Alignment **REQUIRED SIGNATURE LESSON** Bridging to TAKS- Matter "Units Matter" – Master copy of lesson can be found in every campus library; every campus has the kit • All sections but hold 5E on temperature for Unit 10 BrainPopJr Solids, Liquids and Gases Heat AIMS 2nd Grade Texas Core Curriculum – Physical Science Book Gingerbread Cut-outs A Bear Eggs-pedition Teddy Bears and Oranges
NEW TEKS: **2.5 Matter and energy. The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used.** 2.5d 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 **2.6 The student knows that systems have parts**	In the current 2.6a, students must predict what will happen to the system if parts are removed. Current 2.6b looks at systems created by combining parts. The NEW TEK combines these to focus on the physical properties of materials that help them do new things when combined to create a new system (model car/mouse trap/rockets). Look at additional systems that are combinations of parts and will not function in the same way when not combined: such as	

and are composed of organisms and objects. 2.6a manipulate, predict, and identify parts that, when separated from the whole, may result in the part or the whole not working such as flashlights without batteries and plants without leaves 2.6b manipulate, predict, and identify parts that, when put together, can do things they cannot do by themselves, such as a guitar and guitar strings such as a guitar and guitar strings, pencil and pencil lead and/or car and wheels	• brick walls without mortar • lemonade without sugar • cake without flour **TEACHER NOTE**: This concept applies to anything that has "parts" – meaning it is a combination of materials or "matter"	Measuring Munchies A Cooked Up Change Texture Rough, Texture Smooth Property Problems Melting Ice Cubes Frosty Forms Water to Ice to Water Melting Pots A Matter of Change Souper Changes TAKScopes United Streaming Properties of Matter Part 1 Properties of Matter, Part 2: Liquids, Solids and Gasses Mass and Density: Investigating Matter Solids, Liquids and Gases: A First Look Science facts and Fun: Everything is Something Science Facts and Fun: How Much Does the Earth Weigh? Magic School Bus Gains Weight Magic School Bus Goes on Air Air: A First Look NetTrekker Resources: Phase Changer Simuation http://www.bbc.co.uk/schools ... ases.shtml Changing State http://www.bbc.co.uk/schools/scienceclips/ages/9_10/changing_state.shtml Ice Cream Shake/ PBS Kids GO! http://pbskids.org/fetch/parentsteachers/activities/act-icecreamshake.html

2.5 The student knows that organisms, objects, and events have properties and patterns.
2.5b Identify, predict, replicate, and create patterns including those seen in charts, graphs, and numbers
	Compare/contrast different types of matter, including data seen in
	• Charts
	• Graphs
	• clocks
	• Numbers
	  o Metric measurement including
	  ▪ Length
	  ▪ Temperature (Celsius)
	  ▪ Mass
	  ▪ Capacity
	
	Whenever possible do both charts and graphs. REPLICATE using different materials such as: picture cards, dictation, yarn/string, math manipulatives, paperclips, clay, labeled drawings, science notebooks.
	
	TEACHER NOTE: Combine with Math TEKS to use the same types of graphs in both subjects.	

2.7 The student knows that many types of change occur. 2.7a observe, measure, record, analyze, predict, and illustrate changes including size, mass, temperature, color, position, quantity, sound, movement, time	Including • Size –for example: ruler, unifix cubes • Mass – for example: primary balance, double pan balance • Temperature – Celsius thermometer • Color –for example: shades, tint, and primary colors • Position –for example: right, left, up, down, under	

	• Quantity – for example: number • Movement – forward / backward / side to side/ up and down/ spinning • Time – night/day, afternoon/morning, before lunch /after lunch, hour, half hour Introduce that friction causes change in temperature due to movement.	
NEW TEKS: **2.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures.** **2.1a** identify 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 **2.1b** describe the importance of safe practices. **2.1 Scientific processes. The student conducts classroom and field investigations following home and school safety procedures.** 2.1a demonstrate safe practices during classroom and field investigations 2.1b learn how to use and conserve resources and dispose of materials	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 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]	PISD Safety Website -Safety Contracts, games, etc -Science Safety is Elementary (for teachers) -Safety in the Elementary Classroom (for teachers) DuPont Science Safety Zone website Texas Science Safety Standards
NEW TEKS: **2.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures.** 2.1c – 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	**TEACHER NOTE**: When possible, return natural items to their environment (i.e. rocks back to garden) Make note of and teach use of district-wide recycling resource.	
NEW TEKS: **2.2 Scientific investigation and reasoning. The student develops abilities necessary to do scientific inquiry in classroom and outdoor investigations.**	Should be modeled and guided by teacher – Think-Aloud technique Should be oral and/or written Should occur both indoors and outdoors.	

2.2a - ask questions about organisms, objects, and events during observations and investigations 2.2b – plan and conduct descriptive investigations such as how organisms grow 2.2c – collect data from observations using simple equipment such as hand lenses, primary balances, thermometers, and non-standard measurement tools 2.2d – record and organize data using pictures, numbers, and words 2.2e – communicate observations and justify explanations using student-generated data from simple descriptive investigations 2.2f – compare results of investigations with what students and scientists know about the world **2.2 Scientific processes. The student develops abilities necessary to do scientific inquiry in the field and the classroom.** 2.2a ask questions about organisms, objects, and events 2.2b plan and conduct simple descriptive investigations 2.2d gather information using simple equipment and tools to extend the senses 2.2e construct reasonable explanations and draw conclusions using information and prior knowledge 2.2f communicate explanations about investigations 2.2c compare results of investigations with what students and scientists know about the world	Tools and equipment, including senses, should be used in authentic learning settings including during an outside field investigation Communicate both verbally and in science notebook (pictures, words, copying information from class discussion and teacher modeled big book science notebook entry) Develop questions using resources such as Science Notebooks, KLEW charts and students sharing with one another Class discussion of observations is a critical element to allow students to elaborate and build understanding Model student recording of data (pictures, words) – with more support initially as students copy information compiled in class discussion by the teacher on a chart. Include a mini-lesson, as appropriate to model the use of a chosen graphic organizer as a tool to record data and enter into science notebooks	
NEW TEKS: **2.3 Scientific investigation and reasoning. The student knows that information and critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions** **2.3a** identify and explain a problem in his/her own words and propose a task and solution for the problem such as lack of water in a habitat	Introduce the fact that you can solve a problem or answer a question through a systematic approach Model using the Think-Aloud technique (processes and steps to decision-making) 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.	

2.3b make predictions based on observable patterns **2.3c** identify what a scientist is and explore what different scientists do **2.3 Scientific processes. The student knows that information and critical thinking are used in making decisions.** 2.3c explain a problem in his/her own words and identify a task and solution related to the problem 2.3a make decisions using information 2.3b discuss and justify the merits of decisions	Use the KLEW graphic organizer to support this process. Use reflective discussions to develop and answer questions about the scientific concepts studied. Student entries should be their elaboration based on class discussion: Student should use their Science Notebooks and one another as a reference, a resource and a place to record ideas, learning, questions, etc.	
NEW TEKS: **2.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world.** **2.4a** collect, record, and compare information using tools, including computers, hand lenses, rulers, primary balances, plastic beakers, magnets, collecting nets, notebooks, and safety goggles; timing devices, including clocks and stopwatches; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums **2.4b** measure and compare organisms and objects using non-standard units that approximate metric units **2.4 Scientific processes. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured.** 2.4a collect information using tools including rulers, meter sticks, measuring cups, clocks, hand lenses, computers, thermometers, and balances 2.4b measure and compare organisms and objects and parts of organisms and objects, using standard and nonstandard units	Tools that support hands-on investigation must be taught, modeled, guided and used. Students will use science notebooks to record information and draw pictures of shadows, etc. Science notebooks need to be set-up early in the bundle to allow proper use. This should not be the initial lesson on notebook entries. Linear measurement using non-standard units of measure using pictures and shadows of different objects. Additional tools should be utilized as appropriate (i.e. digital cameras for documentation, pictures of primary source (shadows)	