

Eighth Grade Science Curriculum Bundle # 1

Title	Suggested Dates
Fundamentals of Science: Safety, Scientific Method, SI Units, and Graphing	Aug. 24 – Sept. 10 (13 Days)



Big Idea/Enduring Understanding	Guiding Questions
<p>Science is a process of inquiry that includes repeatable observations and testable hypothesis.</p> <p>Recognizing the use of science tools and technology used to problem-solve, communicate, acquire new knowledge and evaluate information to solve problems.</p> <p>Recognizing patterns to help make predictions.</p>	<p>How can safe lab practices be demonstrated in a lab setting?</p> <p>How do the independent, dependent and control variables apply to scientific investigations?</p> <p>How can graphs be used to organize data and make predictions?</p> <p>How can measurements be used to solve problems in everyday situations?</p>

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	Specificity & Examples	Suggested Resources (Read the note above)
<p>Teacher Notes: The first week of this bundle is to be used to introduce Capturing Kids Hearts and address school policies and procedures per campus initiative. *Please note that students, for at least 40% of instructional time, conduct laboratory and field investigations <u>following safety procedures and environmentally appropriate/ethical practices</u> (8.1) This averages out to 2 investigations per week minimum.</p> <p>* Also note that students must know how to use a variety of tools & safety equipment to conduct science inquiry including the <u>use of lab journals/notebooks</u> (8.4A).</p> <p>*As per your school initiative on Lifeguard: Time has been allotted to complete this 4 day program at the end of Bundle #11 or during Bundle #12. In order to get on their calendar after TAKS testing contact Jordan Wheaton @ 512-374-0074 or www.austinflifeguard.com as soon as possible.</p>		
<p>8.1 The student, for at least 40% of instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.</p> <p>8.1A demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Proper use of safety goggles --- Proper handling and storage of graphing calculators and probeware -- Safety Contract <p>In accordance with the Texas Safety Standards: Texas Safety Standards</p> <p>Teacher Note: Safety skills and process TEKS should be embedded and reinforced throughout the year.</p>	<p>Textbook: pp 25</p> <p>VOCABULARY: conclusion, control, controlled experiment, inference, hypothesis, observations, predictions, scientific theory, scientific law, scientific method, estimate, variable (mv/iv and rv/dv), mean, median, mode, range, frequency, mass, density, volume and extrapolation.</p> <p>Assessments: Scientific Processes Test, Graphing Quiz and Nature of Science Test</p> <p>Activities:</p> <ul style="list-style-type: none"> District Safety Contract CORE District Safety Power point Lab Safety Exercise (your choice) Lab Safety Disasters

Eighth Grade Science Curriculum Bundle # 1

<p>8.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>8.2A plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology.</p>	<p>Including: --- The use of data to research scientific theory.</p> <p>Such as: --- Design their own experiments --- Emphasis should be on scientific methods and should build understanding of the variety of methods and their suitability for various tasks.</p> <p>Teacher Note: It is recommended that students create and design at least 1 lab/experiment.</p> <p>Scientific investigations usually involve the collection of relevant data, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected data. (Source: Benchmarks)</p> <p>If more than one variable changes at the same time in an experiment, the outcome of the experiment may not be clearly attributable to any one variable. It may not always be possible to prevent outside variables from influencing an investigation (or even to identify all of the variables.) (Source: Benchmarks)</p>	<p>Textbook: pp 4-5, 9-10 Activities: Sponge Bob: Scientific Method Variable Notes AVID Activity- Writing in Science “Experimental Design Lab Report Activities” pp 55-94</p> <p>Technology: Boiling Temperature of Water CORE</p>
<p>8.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>8.2B design and implement comparative and experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology.</p>	<p>Including: --- Students should experience different types of investigations and understand that different scientific research questions require different research designs.</p> <p>Teacher Note: It is recommended that students create and design at least 1 lab/experiment.</p> <p>Scientists know about the danger of prior expectations to objectivity and take steps to try to avoid it when designing investigations and examining data. One safeguard is to have different investigators conduct independent studies of the same question. (Source: Benchmarks)</p>	<p>Textbook: pp 10-15 *Science Fair/Science Project per campus policy</p> <p>Activities: AVID Activity: Lab Reports Format pp. 90-94 Independent Investigations such as: Airplane Lab, Helicopter Lab, Pendulum Lab, Paper Tower Lab</p> <p>PreAP: *Begin Independent Research Project</p>

Eighth Grade Science Curriculum Bundle # 1

<p>8.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>8.2C collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Measuring distances using meter sticks --- Measuring density --- Using dimensional analysis to convert from English to metric units <p>--- Pre-AP: Emphasis on using probeware in a variety of situations</p> <p><u>Teacher Note:</u> Measurement exercises should progress across the middle school grade levels and begin by developing conceptual understanding. In 8th grade, students can begin to convert from within one metric unit to another.</p> <p><u>Teacher Note:</u> Plan to review 6.6B, calculate density to identify an unknown substance.</p>	<p>Textbook: pp 20-24</p> <p>Activities:</p> <p>Metrics Practice Lab CORE</p> <p>Density Lab</p> <p>King Henry Slider</p> <p>Metric Mania Conversion Practice</p> <p>Density Power point</p> <p>Dunk for Density</p> <p>Density Practice</p> <p>Asking Experimental Questions: Density Coin Operated (ATE p. 653)</p> <p>AVID Activity: Writing in Science “Observation Narrative” pp 26-28</p> <p>Holt Math Skills for Science</p> <ul style="list-style-type: none"> #27-What is SI? #28-A Formula For SI-Catch Up? #31-The Unit Factor & Dimensional Analysis <p>PreAP:</p> <p>Units Are Our Friends</p> <p>Dimensional Analysis-Snail Race</p> <p>Dimensional Analysis Power point</p> <p>Metric2English Conversion</p>
<p>8.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>8.2D construct tables and graphs, using repeated trials and means, to organize data and identify patterns.</p>	<p>Including:</p> <ul style="list-style-type: none"> ---Range, Median, Mode, Mean, Frequency ---Extrapolate from graphs and data tables to predict expected results <p><u>Teacher Note:</u> Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as correct. (Source: Benchmarks)</p>	<p>Textbook: p 14</p> <p>Activities:</p> <p>Holt Math Skills for Science #8: Average, Mode and Median CORE</p> <p>Graphing in Science Power point</p> <p>Graphing-Analyzing</p> <p>Collecting-Analyzing</p> <p>Collecting Data</p> <p>AVID Activity: Making a Data Table 71- 79</p> <p>Holt Science Skills:</p> <ul style="list-style-type: none"> #25 Introduction to Graphs #26 Grasping Graphs #29 Making Data Meaningful <p>PreAP:</p> <p>LTF Lesson # IV: Graphing Skills Chem/Phys pp 89-93.</p>

Eighth Grade Science Curriculum Bundle # 1

<p>8.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>8.2E analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.</p>		<p>Textbook: pp 14-15 *Science Fair/Science Project per campus policy</p> <p>Activities: AVID Activity: Lab Reports Format pp. 90-94 Independent Investigations such as: Airplane Lab, Helicopter Lab, Pendulum Lab, Paper Tower Lab</p> <p>PreAP: *Begin Independent Research Project</p>
<p>8.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</p> <p>8.4A use appropriate tools to collect, record, and analyze information, including lab journals/notebooks, beakers, meter sticks, graduated cylinders, anemometers, psychrometers, hot plates, test tubes, spring scales, balances, microscopes, thermometers, calculators, computers, spectrosopes, timing devices, and other equipment as needed to teach the curriculum.</p>	<p>Including: ---meter sticks, timing devices, triple beam and electronic balances, computers, and probeware</p>	<p>Textbook: p 21 Activities: Metric Practice Lab CORE</p>
<p>8.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</p> <p>8.4B use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.</p>	<p>Including: --- Proper use of safety goggles -- Safety Contract</p> <p>In accordance with the Texas Safety Standards: Texas Safety Standards</p> <p>Teacher Note: Safety skills and process TEKS should be embedded and reinforced throughout the year.</p>	<p>Textbook: p 25 Activities: District Safety Contract CORE District Safety Power point Lab Safety Exercise (your choice) Lab Safety Disasters</p>