

Sixth Grade Science Curriculum Bundle #9



Title	Suggested Dates
Force and Motion	Feb. 22-March 11 (14 days)

Big Idea/Enduring Understanding	Guiding Questions
Forces on an object causes changes in motion	How can we use forces to understand the motion of 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	Specificity & Examples	Suggested Resources (Read the note above)
To access additional resources, go to: S:\!PISD Public\Science Curriculum Resources\6th Grade Resource Activities		
<p>6.8 Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to: 6.8B identify and describe the changes in position, direction, and speed of an object when acted upon by unbalances forces</p>	<p>Including: --- Describe how a push or pull can change the position, direction, and speed of an object --- Distinguish between balanced and unbalanced forces. ---Recognize that unbalanced forces cause changes in motion. ---Discuss equilibrium for unbalanced/balanced forces</p>	<p><u>Vocabulary:</u> unbalanced force, speed, constant speed, average speed, motion, force, balanced force, acceleration, velocity</p> <p><u>Uncovering Student Ideas In Science</u>, Keeley, Vol. 4, #8, Standing on One Foot</p> <p><u>AVID Activity-</u> Writing in Science pages 22-23 “Pre-write and Quickwrite”</p> <p>Measuring Force Gateway Book TE pages 57-66 SE pages 70-85</p> <p>-The Hiker Lab p. 469 (AP Strategies-Laying the Foundation Chemistry & Physics)</p> <p><u>PreAP:</u> Speed: Measuring Constant Speed p. 518 (AP Strategies-Laying the Foundation Chemistry & Physics)</p> <p><u>CORE:</u> Holt Textbook Labs- Built for Speed page 607 and Friction 500 page 608.</p>
<p>6.8 Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to: 6.8C Calculate average speed using distance and time</p>	<p>Including: ---measure distance and time ---be able to use calculator to determine speed of moving object ---must know the formula for speed</p>	<p>Calculate Speed for Resource Labs written above</p>

Sixth Grade Science Curriculum Bundle #9

measurements		
<p>6.8 Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to:</p> <p>6.8D measure and graph changes in motion</p>	<p>Including:</p> <ul style="list-style-type: none"> ---Speed --- Use data to calculate speed ---Use data to predict speed 	<p>http://www.mysciencesite.com/motion_graphs.pdf</p> <p>Technology: Create a graph using Excel using Speed lab results.</p>
<p>6.1 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>6.1A demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standard</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Safe practices with lab equipment --- Continue to follow District Safety Contract --- Continue to operate in accordance with the Texas Safety Standards <p><u>Teacher Note:</u> Safety skills and process TEKS should be embedded and reinforced throughout the year.</p>	<p>Texas Safety Standards</p>
<p>6.1 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>6.1B practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Recycle lab material 	
<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2A plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology;</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Independent and dependent variables --- Controls --- Procedures --- Materials --- Using a standard lab report format 	<p>AVID Activity- Writing in Science pages 55-94 “Experimental Design Lab Report Activities”</p>
<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2B design and implement experimental investigations by making observations, asking well-defined questions, formulating testable hypotheses, and using appropriate equipment and technology;</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Independent and dependent variables --- Controls --- Procedures --- Materials --- Using a standard lab report format <p><u>Teacher Note:</u> Emphasize that not all parts of scientific method may be used for every investigation and the ones that are used depends on the task</p>	<p>AVID Activity- Writing in Science pages 55-94 “Experimental Design Lab Report Activities”</p>

Sixth Grade Science Curriculum Bundle #9

<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2C 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"> --- Collecting information using the metric system --- Pre-AP: Emphasis on using probeware in a variety of situations 	<p><u>AVID Activity</u>- Writing in Science pages 26-28 “ Observation Narrative”</p> <p><u>AVID Activity</u>- reading in Science pages 111-132 “Additional Active Reading Graphic Organizers”</p> <p><u>Venn Diagram</u>- speed, velocity and acceleration</p> <p><u>Acceleration Foldable</u></p>
<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2D 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"> --- Organization of data <ul style="list-style-type: none"> • data charts for time/distance --- Graphing data-bar graph & line graph for speed <ul style="list-style-type: none"> • label each axis with name and units • provide a descriptive title <p>Identify appropriate use of different types of data representation.</p> <p>Understand what graphs look like for acceleration, speeding up, slowing down and changing direction</p>	
<p>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>6.2E analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.</p>	<p>Including:</p> <ul style="list-style-type: none"> ---Look for trends and /or patterns specific in the data and/or graph ---Relate conclusion to hypothesis/problem ---Identify sources of error/ways to improve investigation ---Communicate conclusion effectively in writing 	<p><u>Avid Activity</u>-Writing in Science pages 29-30 “Comparative Analysis”</p>
<p>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>6.3B use models to represent aspects of the natural world such as a model of Earth's layers;</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Conceptual <ul style="list-style-type: none"> • Scientific Method • Speed, Acceleration and Velocity --- Mathematical <ul style="list-style-type: none"> • Graph average speed --- Physical <ul style="list-style-type: none"> • Calculating speed 	<p>http://www.cpo.com/IPCRES/pdfs/unit1/Ch2Sec1.pdf Models to predict speed</p>
<p>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>6.3C identify advantages and limitations of models such</p>	<p>Including:</p> <ul style="list-style-type: none"> Limitations <ul style="list-style-type: none"> • Miscalculations of speed due to human error Advantages <ul style="list-style-type: none"> • Can determine speed by actually recording distance and time 	

Sixth Grade Science Curriculum Bundle #9

<p>as size, scale, properties, and materials;</p>		
<p>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>6.3D relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content</p>	<p>Including:</p> <ul style="list-style-type: none"> • Newton-Three Laws of Motion 	<p><u>AVID:</u> Writing in Science page 24 “Brief Autobiography”</p>
<p>6.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</p> <p>6.4A use appropriate tools to collect, record, and analyze information, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, triple beam balances, microscopes, thermometers, calculators, computers, timing devices, and other equipment as needed to teach the curriculum;</p>	<p>Including:</p> <ul style="list-style-type: none"> ---Journals/notebooks ---Data collection tools as appropriate 	