

## Sixth Grade Science Curriculum Bundle # 8



Title	Suggested Dates
Potential/Kinetic Energy and Machines	Jan. 31-Feb.18 (14.5 days)

Big Idea/Enduring Understanding	Guiding Questions
<p>Force on objects cause changes in motion</p> <p>Force and motion are related to potential and kinetic energy</p> <p>Simple machines, such as inclined planes and pulleys make it easier to do work by rearranging force and distance.</p>	<p>How do force and energy interact?</p> <p>How can we use forces to understand the motion of objects?</p> <p>Why do we use inclined planes and pulleys?</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)
<b>To access additional resources, go to: S:\PISD Public\Science Curriculum Resources\6th Grade Resource Activities</b>		
<p><b>6.8 Force, motion and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to:</b></p> <p><b>6.8A</b> compare and contrast potential and kinetic energy</p>	<p>Including:</p> <p>---Potential and kinetic energy</p> <ul style="list-style-type: none"> <li>• Compare and contrast potential and kinetic energy</li> </ul>	<p><b>Vocabulary:</b> pulleys, inclined plane, motion, force, potential/kinetic energy,</p> <p><b>AVID Activity-</b> Writing in Science pages 22-23 “Pre-write and Quickwrite”</p> <p><b>PreAP/Core-</b> Rollercoaster Lab p. 606(AP Strategies-Laying the Foundation Chemistry &amp; Physics)- Can be adapted for regular classes</p> <p><b>Energy swings Lab</b> (use as demonstration) pg. 117 (Holt Science and Technology)</p>
<p><b>6.8 Force, motion and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to:</b></p> <p><b>6.8E</b> investigate how inclined planes and pulleys can be used to change the amount of force to move an object</p>	<p>Including:</p> <p>---where potential and kinetic energy are found within pulleys and planes</p> <p>---where force is needed to make a plane work</p> <p>---how pulleys/planes changes the amount of force needed</p>	<p>Marble Lab (use of inclined plane)</p> <p><b>CORE:</b> Inclined Plane Lab- Share folder</p> <p><b>CORE:</b> Pulley Lab- Share folder (<b>PreAP-</b> ext. students will measure the force using spring scale or force and motion sensor)</p>

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<p><b>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.</b></p> <p><b>6.1A</b> 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"> <li>--- Safe practices with lab equipment</li> <li>--- Continue to follow District Safety Contract</li> <li>--- Continue to operate in accordance with the Texas Safety Standards</li> </ul> <p><u>Teacher Note:</u> Safety skills and process TEKS should be embedded and reinforced throughout the year.</p>	<p><a href="#">Texas Safety Standards</a></p>
<p><b>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.</b></p> <p><b>6.1B</b> practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials</p>	<p>Including:</p> <ul style="list-style-type: none"> <li>--- Recycle lab material</li> </ul>	
<p><b>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>6.2A</b> 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"> <li>--- Independent and dependent variables</li> <li>--- Controls</li> <li>--- Procedures</li> <li>--- Materials</li> <li>--- Using a standard lab report format</li> </ul> <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><b><u>AVID Activity-</u></b> Writing in Science pages 55-94 “Experimental Design Lab Report Activities”</p>
<p><b>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>6.2B</b> 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"> <li>--- Independent and dependent variables</li> <li>--- Controls</li> <li>--- Procedures</li> <li>--- Materials</li> <li>--- Using a standard lab report format</li> </ul> <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><b><u>AVID Activity-</u></b> Writing in Science pages 55-94 “Experimental Design Lab Report Activities”</p>
<p><b>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>6.2C</b> 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"> <li>--- Collecting information using the metric system</li> <li>--- Pre-AP: Emphasis on using probeware in a variety of situations</li> </ul>	<p><b><u>AVID Activity-</u></b> Writing in Science pages 26-28 “Observation Narrative”</p> <p><b>Venn Diagram</b> to compare potential to kinetic  <b>Labeled Drawings-</b> Draw an inclined plane and pulley system</p>

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		<b><u>AVID Activity</u></b> - Reading in Science pages 111-132 “ Additional Active Reading Graphic Organizers”
<p><b>6.2 The student uses scientific inquiry methods during laboratory and field investigations.</b></p> <p><b>6.2E</b> 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"> <li>--- Relate conclusion to hypothesis/problem</li> <li>--- Identify sources of error/ways to improve investigation</li> <li>--- Communicate conclusion effectively in writing</li> </ul>	
<p><b>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</b></p> <p><b>6.3B</b> 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"> <li>--- Conceptual <ul style="list-style-type: none"> <li>• Scientific Method</li> </ul> </li> <li>--- Physical <ul style="list-style-type: none"> <li>• Incline planes &amp; pulleys</li> </ul> </li> </ul>	
<p><b>6.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</b></p> <p><b>6.3C</b> identify advantages and limitations of models such as size, scale, properties, and materials;</p>	<p>Including:</p> <p>Limitations-</p> <ul style="list-style-type: none"> <li>• Student error in calculating force</li> <li>• Machine error</li> </ul> <p>Advantages:</p> <ul style="list-style-type: none"> <li>• To see how simple machines work</li> </ul>	
<p><b>6.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</b></p> <p><b>6.4A</b> 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>	<ul style="list-style-type: none"> <li>--- Journals/notebooks</li> <li>--- Data collection tools as appropriate</li> </ul>	
<p><b>6.4 The student knows how to use a variety of tools and safety equipment to conduct science inquiry.</b></p> <p><b>6.4B</b> 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>Follow all lab safety rules</p>	