


Sixth Grade Science Curriculum Bundle # 3

Title		Suggested Dates
Force & Motion		October 5-October 23 (14 days)

Big Idea/Enduring Understanding	Guiding Questions
Force on objects cause changes in motion.	How do force and energy interact? 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)
<p>6.6 The student knows that there is a relationship between force and motion.</p> <p>6.6A Identify and describe the changes in position, direction of motion, and speed of an object when acted upon by force.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- 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. ---Be sure to include how energy is transformed from one type to another (i.e. potential to kinetic) ---Discuss equilibrium for unbalanced/balanced forces <p><i>Teacher Note: New TEK 2010-2011-investigate how inclined planes and pulleys can be used to change the amount of force to move an object</i></p>	<p>Vocabulary: unbalanced force, pulleys, inclined plane, speed, constant speed, average speed, motion, force, balanced force</p> <p>Uncovering Student Ideas In Science, Keeley, Vol. 4, #8, Standing on One Foot</p> <p>AVID Activity- Writing in Science pages 22-23 “Pre-write and Quickwrite”</p> <p>-Rollercoaster Lab p. 606(AP Strategies-Laying the Foundation Chemistry & Physics)- Can be adapted for regular classes</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>Marble Lab (use of inclined plane)</p> <p>PreAP: Speed: Measuring Constant Speed p. 518 (AP Strategies-Laying the Foundation Chemistry & Physics)</p> <p>Holt Textbook Labs- Built for Speed page 607 and Friction 500 page 608.</p> <p>http://www.utdanacenter.org/sciencetoolkit/instruction/sn</p>

Sixth Grade Science Curriculum Bundle # 3

		apshots/6.php
<p>6.6 The student knows that there is a relationship between force and motion.</p> <p>6.6B Demonstrate that changes in motion can be measured and graphically represented.</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 Conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.</p> <p>6.1A Demonstrate safe practices during field and laboratory investigations.</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 Conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.</p> <p>6.1B Make wise choices in the use and conservation of resources and the disposal and recycling of materials.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Recycle lab material 	<p>http://www.storyofstuff.com/ - Story of Stuff</p>
<p>6.2 Uses scientific methods during fields and laboratory investigations.</p> <p>6.2A Plan and implement descriptive and simple experimental investigations, including asking well-defined questions, formulating testable hypotheses, and selecting and using 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>
<p>6.2 Uses scientific methods during fields and laboratory investigations.</p> <p>6.2B Collect information by observing and measuring.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Collecting information using the metric system <ul style="list-style-type: none"> • Introduce metric system --- Pre-AP: Emphasis on using probeware in a variety of situations <p><u>Teacher Note:</u> New TEK 2010-2011-Collect and record data using the International System of Units (SI) and qualitative means, such as label drawings, writing, and graphic organizers.</p>	<p>AVID Activity- Writing in Science pages 26-28 “ Observation Narrative”</p>
<p>6.2 Uses scientific methods during fields and laboratory investigations.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Look for trends and/or patterns specific in the data and/or graph 	<p>AVID Activity- Writing in Science pages 29-30 “Comparative Analysis”</p>

Sixth Grade Science Curriculum Bundle # 3

<p>6.2C Analyze and interpret information to construct reasonable explanations from direct and indirect evidence.</p>		
<p>6.2 Uses scientific methods during fields and laboratory investigations.</p> <p>6.2D Communicate valid conclusions.</p>	<p>Including: --- Relate conclusion to hypothesis/problem --- Identify sources of error/ways to improve investigation --- Communicate conclusion effectively in writing</p>	<p>AVID Activity- Reading in Science pages 111-132 “ Additional Active Reading Graphic Organizers”</p>
<p>6.2 Uses scientific methods during fields and laboratory investigations.</p> <p>6.2E Construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate data.</p>	<p>Including: --- Organization of data <ul style="list-style-type: none"> • data charts --- Graphing data-bar graph & line graph <ul style="list-style-type: none"> • label each axis with name and units • provide a descriptive title Identify appropriate use of different types of data representation.</p>	
<p>6.3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>6.3A Analyze, review, and critique scientific explanations, including hypotheses and theories as to their strengths and weaknesses using scientific evidence and information.</p>	<p><u>Teacher Note:</u> Emphasize the nature of scientific explanations: testability, repeatability, evidence, predictive nature.</p>	
<p>6.3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>6.3C Represent the natural world using models and identify their limitations.</p>	<p>Including: --- Conceptual <ul style="list-style-type: none"> • Scientific Method –advantages and limitations --- Mathematical <ul style="list-style-type: none"> • Graphs to make predictions- advantages and limitations --- Physical Incline planes & pulleys– advantages and limitations</p>	<p>http://www.cpo.com/IPCRES/pdfs/unit1/Ch2Sec1.pdf Models to predict speed</p>
<p>6.3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>6.3D Evaluate the impact of research on scientific thought, society, and the environment.</p>	<p>--- Current event on speed & motion</p>	<p><u>AVID Activity:</u> Writing in Science page 24 “Brief Autobiography”.</p>
<p>6.3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>6.3E Connect Grade 6 science concepts with the history of science and contributions of scientists.</p>	<p>Including: --- Newton-Three Laws of Motion</p>	
<p>6.4 Knows how to use a variety of tools and methods</p>	<p>Including:</p>	

Sixth Grade Science Curriculum Bundle # 3

<p>to conduct science inquiry.</p> <p>6.4A Collect, analyze, and record information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, timing devices, hot plates, test tubes, safety goggles, spring scales, magnets, balances, microscopes, telescopes, thermometers, calculators, field equipment, compasses, computers, and computer probes.</p>	<p>--- Journals/notebooks --- Data collection tools as appropriate</p>	
<p>6.4 Knows how to use a variety of tools and methods to conduct science inquiry.</p> <p>6.4B Identify patterns in collected information using percent, average, range, and frequency.</p>	<p>- Use descriptive statistics including frequency, range, mean, median, and mode</p> <p><u>Teacher Note:</u> Data needs to be in metric system and decimals rather than fractions.</p>	
<p>6.5 The student knows that systems may combine with other systems to form a larger system.</p> <p>6.5B Describe how the properties of a system are different from the properties of its parts.</p>	<p>Including:</p> <p>---Describe the components of a system</p> <ul style="list-style-type: none"> • Incline plane & pulley <p>--- Describe how the components interrelate</p>	