

UNIT 4

Course: Language Arts/Science/SEL	Grade Level: 6th Grade
Unit Title: Changes	Length of Unit: Until the end of the second trimester - Approximately 6 weeks
<p>Unit Summary: Students will be able to apply Newton’s Third Law of Motion to relate forces to explain the motion of objects. Students also develop ideas that objects can exert forces on each other even though the objects are not in contact, through fields. Students develop their understanding of important qualitative ideas about energy including that the interactions of objects can be explained and predicted using the concept of transfer of energy from one object or system of objects to another, and the total change of energy in any system is always equal to the total energy transferred into or out of the system. Students understand that objects that are moving have kinetic energy and that objects may also contain stored (potential) energy, depending on their relative positions. Students will also come to know the difference between energy and temperature, and begin to develop an understanding of the relationship between force and energy. They will also understand the relationships of kinetic energy to the mass of an object and the speed of an object. Drawing from a variety of literacy skills, students analyze how parts of text fit together in a structure to create a message. Students will use research skills, especially to gather and compare information from multiple sources to ensure they have valid facts to support discussion and writing. After using the writing process, students will produce informational writing that introduces a topic, organizes ideas, and develops the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.</p> <p>SEL Throughout this unit, students will be asked to <u>monitor their progress and self-assess</u> their ability to identify strategies for preventing and resolving interpersonal problems.</p>	
Stage 1- Desired Results	
STANDARDS	Transfer
	<i>Students will be able to independently use their learning to...</i>
	<p>TG1: Apply Newton’s Laws to the design of a solution to a real-world problem that involves forces and interactions of objects.</p> <p>TG2: Read a wide range of texts, demonstrating an understanding of a text by drawing on details to explain how text structure helps develop the theme, setting, plot,</p>

<p>RL.6.2: Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.</p>	<p>or central idea in a text.</p> <p>TG3: Engage in research on a topic of interest, gather evidence from multiple, credible sources, including different media formats, and draw on an understanding of the craft and structure of nonfiction to write a well-supported expository text.</p>	
<p>RI.6.2: Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.</p> <p>RL.6.5: Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.</p> <p>RI.6.5: Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.</p> <p>W.6.2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.</p> <p>A. Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia</p>	<p>Meaning</p>	
	<p>ENDURING UNDERSTANDINGS <i>Students will understand that...</i></p> <p>EU1: When two objects interact, each one exerts a force on the other that can cause energy to be transferred to or from the object. <i>(Models can be used to represent systems and their interactions—such as inputs, processes and outputs—and energy and matter flows within systems.)</i></p> <p>EU2: The motion of an object is determined by the sum of the forces acting on it; if the total force on the object is not zero, its motion will change. The greater the mass of the object, the greater the force needed to achieve the same change in motion. For any given object, a larger force causes a larger change in motion. <i>(Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and forces at different scales.)</i></p> <p>EU3: All positions of objects and the directions of forces and motions must be</p>	<p>ESSENTIAL QUESTIONS <i>Students will continue to consider . . .</i></p> <p>EQ1: Why are some materials attracted to each other and other materials not?</p> <p>EQ2: Why do objects move the way they do?</p> <p>EU3: How do we make sense of scientific phenomena? <i>How can design solutions be</i></p>

<p>when useful to aiding comprehension.</p> <p>B. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.</p> <p>C. Use appropriate transitions to clarify the relationships among ideas and concepts.</p> <p>D. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>E. Establish and maintain a formal style.</p> <p>F. Provide a concluding statement or section that follows from the information or explanation presented.</p> <p>W.6.7: Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.</p> <p>SEL:</p> <p>Goal 1: Develop self-awareness and self-management skills to achieve school and life success.</p> <p>Goal 2: Use social-awareness and interpersonal skills to establish and maintain positive relationships.</p> <p>Goal 3: Demonstrate decision-making skills and responsible behaviors in personal, school, and community contexts.</p>	<p>described in an arbitrarily chosen reference frame and arbitrarily chosen units of size. In order to share information with other people, these choices must also be shared. <i>(Graphs, charts, and images can be used to identify patterns in data.)</i></p> <p>EU4: Curiosity in a topic leads to research (reading) that draws on several sources; the inquiry is refocused, when appropriate, to answer questions and share learning with others.</p> <p>EU5: Effective readers break down the text's structure to see how one component (a sentence, paragraph, chapter, stanza, or section) helps develop the literary elements or ideas in a text.</p> <p>EU6: An author introduces and develops an idea or theme through specific details.</p> <p>EU7: Effective writers take detailed notes, make observations, engage in inquiry about their experiments and use this in their writing to help the reader better understand the text.</p> <p>EU8: Gathering information from multiple sources and media, as well as comparing what different authors say about a topic, helps readers build deeper knowledge.</p> <p>EU9: Achieving goals requires planning, thinking, and action. Clear goals are</p>	<p><i>compared and improved?</i></p> <p>EQ4: How does inquiry lead to learning? <i>How does reading influence me?</i></p> <p>EQ5: How does a text's structure help me understand the text? <i>How do the parts of the text contribute to the overall development of the text?</i></p> <p>EQ6: How does an author use specific details to convey a text's theme/central idea?</p> <p>EQ7: How do writers deepen their writing skills by exploring and examining their experiments?</p> <p>EQ8: How does analyzing more than one text help us to interpret the author's intent and build our knowledge?</p> <p>EQ9: What does it take to be successful when setting and achieving goals?</p>
---	--	--

<p>Supporting: Science: MS-PS2-2: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the objects.</p>	<p>important, as is a plan to implement and monitor progress. Modifications to the plan may be needed in order to achieve success.</p> <p>EU10: Building healthy relationships takes time and effort; healthy relationships involve compromise, flexibility, and the ability to resolve conflicts.</p>	<p>EQ10: How do we develop healthy relationships? <i>What is my responsibility in a relationship?</i></p>
<p>MS-PS3-1: Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.</p> <p>MS-PS3-2: Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.</p> <p>Language Arts: RL.6.4: Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.</p> <p>RI.6.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.</p> <p>RL.6.7: Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the</p>	<p>Acquisition</p>	
	<p><i>Students will know...</i></p> <p>K1: Academic Vocabulary</p> <p>Science K2: For any pair of interacting objects, the force exerted by the first object on the second object is equal in strength to the force that the second object exerts on the first, but in the opposite direction</p> <p>K3: Motion energy is properly called kinetic energy; it is proportional to the mass of the moving object and grows with the square of its speed</p> <p>K4: A system of objects may also contain stored (potential) energy, depending on their relative positions</p> <p>K5: Additional Cross-Cutting Concepts to those identified in Stage 1</p> <ul style="list-style-type: none"> • The uses of technologies and any 	<p>Year-Long English/Spanish "I Can" Statements</p> <p><i>Students will be skilled at...</i></p> <p>Science S1: I can plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.</p> <p>S2: I can apply scientific ideas or principles to design an object, tool, process or system.</p> <p>S3: I can develop a model to describe unobservable mechanisms.</p> <p>S4: I can construct and interpret graphical displays of data to identify linear and nonlinear relationships.</p>

<p>text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.</p> <p>RI.6.7: Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p> <p>W.6.6: Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.</p>	<p>limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions</p> <ul style="list-style-type: none"> Proportional relationships (e.g. speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes <p>Language Arts/Digital Literacy</p> <p>K6: The format of a bibliography</p> <p>K7: Text structures (how sentences, paragraphs, stanzas, chapters fit into the structure of a text)</p> <p>K8: The research process (relevant evidence, what sources are available for research, what makes texts valid sources, etc.)</p> <p>K9: Structure of informative/explanatory writing</p> <p>K10: How to be a responsible digital citizen</p> <p>SEL</p> <p>K11: Strategies for preventing and solving interpersonal problems</p>	<p>S5: I can analyze and interpret data to determine similarities and differences in findings.</p> <p>S6: I can construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.</p> <p>Language Arts/Digital Literacy</p> <p>S7: I can determine how the theme or central idea is conveyed through specific details in a text. (RL/RI.2)</p> <p>S8: I can provide an objective summary. (RL/RI.2)</p> <p>S9: I can explain how specific parts of a text fit together and impact a text structure. (RL/RI.5)</p> <p>S10: I can write informative/explanatory texts to examine a topic and convey ideas, concepts, and information. (W.2)</p> <ul style="list-style-type: none"> I can introduce a topic and organize ideas, concepts, and information using various strategies. I can use formatting, graphics, and multimedia. I can develop the topic with relevant
---	--	--

		<p>facts, definitions, concrete details, quotations, or other information and examples.</p> <ul style="list-style-type: none">• I can use appropriate transitions to clarify the relationships among ideas and concepts.• I can use precise language and domain-specific vocabulary to inform about or explain the topic.• I can establish and maintain a formal style.• I can provide a concluding statement or section that follows from the information or explanation presented. <p>S11: I can gather information from several sources and conduct a short research project and build knowledge. (W.7)</p> <p>S12: I can create a bibliography page. (W.8)</p> <p>S13: I can identify when I need to give credit to others without plagiarism. (Info/Dig Lit Goal 1)</p> <p>S14: I can identify the author and title of information in multiple platforms to give credit to my sources. (Info/Dig Lit Goal 1)</p> <p>S15: I can share my ideas and thoughts based on my reading. (Info/Dig Lit Goal 2)</p> <p>S16: I can articulate the main idea of my source. (Info/Dig Lit Goal 3)</p>
--	--	--

		<p>S17: I can work with others to exchange ideas and solve a problem. (Info/Dig Lit Goal 3)</p> <p>S18: I can select the right technology to help me organize my ideas. (Info/Dig Lit Goal 4)</p> <p>SEL</p> <p>S19: I can identify strategies for preventing and resolving interpersonal problems.</p>