

2008-2009  
**Powering Up!**  
 Third Nine Weeks

5 <sup>th</sup> grade (2001)	5 <sup>th</sup> grade (2010)	4 <sup>th</sup> grade (2001)	4 <sup>th</sup> grade (2010)
<p><b>8. Identify properties and changes of matter. (E, P)</b></p> <p>a. Observe and explore physical and chemical properties such as density, boiling/freezing point, and solubility of a substance.</p> <p>b. Explore, observe, discuss, and record physical and chemical changes using everyday substances.</p> <p>c. Recognize elements that combine chemically to produce compounds.</p> <p>d. Demonstrate the ability to use simple measuring devices using metric and English units.</p> <p><b>9. Investigate the effect motions and forces have on objects. (E, L, P)</b></p> <p>a. Explore, measure, and graph the motion of an object.</p> <p>b. Explore and measure the effect of force on an object.</p>	<p><b>2. Understand relationships of the properties of objects and materials, position and motion of objects, and transfer of energy to explain the physical world.</b></p> <p>a. Determine how the properties of an object affect how it acts and interacts. (DOK 2)</p> <p>b. Differentiate between elements, compounds, and mixtures and between chemical and physical changes (e.g., gas evolves, color, and/or temperature changes). (DOK 2)</p> <p>c. Investigate the motion of an object in terms of its position, direction of motion, and speed. (DOK 2)</p> <p>* The relative positions and movements of objects using points of reference (distance vs. time of moving objects)</p> <p>* Force required to move an object using appropriate devices (e.g., spring scale)</p> <p>* Variables that affect speed (e.g., ramp height/length/surface, mass of object)</p> <p>* Effects of an unbalanced force on an object's motion in terms of speed and direction</p>	<p><b>8. Investigate the changes in the states of matter. (P)</b></p> <p>a. Observe that matter occupies space and has mass and volume.</p> <p>b. Demonstrate transformations of the states of matter.</p> <p>c. Explore and classify physical and chemical changes.</p> <p><b>9. Examine the different forms of energy. (E, L, P)</b></p> <p>a. Differentiate energy as potential or kinetic energy.</p> <p>b. Identify and explore forms of energy such as heat, sound, light, or electricity.</p> <p>c. Demonstrate the use of the sun as an energy source.</p>	<p><b>2. Use the properties of objects and materials, position and motion of objects, and transfer of energy to develop an understanding of physical science concepts.</b></p> <p>a. Recognize that materials may be composed of parts that are too small to be seen without magnification. (DOK 1)</p> <p>b. Distinguish between physical and chemical changes and between objects composed of a single substance from those composed of more than one substance. (DOK 2)</p> <p>c. Determine the causes and effects of forces on motion. (DOK 2)</p> <p>* Force exerted over a distance causes work to be done and that the result (work) is the product of force and distance</p> <p>* Friction on moving objects and actions that increase or decrease friction</p> <p>* Momentum and inertia</p> <p>d. Explain how energy flowing through an electrical circuit can be</p>

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<p><b>10. Examine the transformations of forms of energy. (P)</b></p> <p>a. Design and construct simple and compound machines.</p> <p>b. Design and construct electrical circuits (open, closed, series, parallel).</p> <p>c. Design and construct an electromagnet.</p>	<p>d. Categorize examples of potential energy as gravitational (e.g., boulder on a hill, child on a slide), elastic (e.g., compressed spring, slingshot, rubber band), or chemical (e.g., unlit match, food). (DOK 2)</p> <p>e. Differentiate between the properties of light as reflection, refraction, and absorption. (DOK 1)        * Image reflected by a plane mirror and a curved-surfaced mirror        * Light passing through air or water        * Optical tools such as prisms, lenses, mirrors, and eyeglasses</p> <p>f. Describe physical properties of matter (e.g., mass, density, boiling point, freezing point) including mixtures and solutions. (DOK 1)        * Filtration, sifting, magnetism, evaporation, and flotation        * Effects of temperature changes on the solubility of substances</p> <p>g. Categorize materials as conductors or insulators and discuss their real life applications (e.g., building construction, clothing, animal covering). (DOK 2)</p>		<p>converted from electrical energy to light, sound, or heat energy. (DOK1)        * Parts of an electric circuit and resulting actions when circuits are opened or closed        * Construction and uses of electromagnets        * Energy transferred through an electrical circuit to a bulb or bell to its surroundings as light, sound, and heat (thermal) energy</p> <p>e. Describe how light behaves (travels in a straight line, is absorbed, reflected, refracted, or appears transparent or translucent). (DOK 1)</p> <p>f. Investigate and draw conclusions about the relationship between the rate of vibrating objects and the pitch of the sound. (DOK 3)</p> <p>g. Describe how heat flows from a warm object to a cold one and categorize examples of materials that may or may not be used as insulators. (DOK 2)</p>
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