

Eighth Grade State Performance Standards

B1 – B4 – Concepts of Physical Science	<p>SB Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p>SB1 Students develop an understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior.</p> <p>SB2 Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved.</p> <p>SB3 Students develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems.</p> <p>SB4 Students develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects.</p>
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Grade Level Expectations	KGBSD Student Objectives
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<p>The student demonstrates understanding of the structure and properties of matter by:</p> <p>{8} SB1.1 using physical and <u>chemical</u> properties (i.e., density, boiling point, freezing point, conductivity, flammability) to differentiate among materials (i.e., elements, compounds, and mixtures).</p> <p>The student demonstrates an understanding of how energy can be transformed, transferred, and conserved by:</p> <p>{8} SB2.1 identifying the initial source and resulting change in forms of energy in common phenomena (e.g., sun to tree to wood to stove to cabin heat).</p>	<p>K – SB1.1 identifying and differentiating between elements, compounds, molecules and atoms.</p> <p>K – SB1.2 differentiating between families of the periodic table and discuss how they react with other matter.</p> <p>K – SB1.3 comparing and contrast the abundance and availability of various elements.</p> <p>K - SB2.1 identifying the initial source and resulting change in forms of energy in common phenomena. (e.g., sun to tree to wood to stove to cabin heat)</p> <p>K - SB2.2 arguing that everything that happens in the universe involves energy transformations.</p> <p>K - SB2.3 listing and describing the functions of the six simple machines.</p> <p>K - SB2.4 analyzing a complex machine’s simple parts.</p> <p>K - SB2.5 demonstrating that work can be made easier by manipulating simple machines.</p> <p>K - SB2.6 calculating work, power, inertia, and mechanical advantage.</p> <p>K - SB2.7 manipulating simple technological devices and link these with some scientific ideas. (e.g., can opener and levers, bicycle pumps and air pressure)</p>
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<p>The student demonstrates understanding of the interactions between matter and energy and the effects of these interactions on systems by:</p> <p>{8} SB3.1 exploring changes of state with increase or decrease of particle speed associated with heat transfer. (L)</p> <p>{8} SB3.2 exploring through a variety of models (e.g., gumdrops and toothpicks) how atoms may bond together into well defined molecules or bond together in large arrays. (L)</p> <p>The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by:</p> <p>{8} SB4.1 demonstrating (L) and explaining circular motion.</p> <p>{8} SB4.2 describing the interactions between charges.</p>	<p>K - SB2.8 comparing kinetic and potential energy.</p> <p>K - SB2.9 giving examples of energy conversions among the different forms of energy.</p> <p>K - SB2.10 comparing exothermic and endothermic reaction.</p> <p>K – SB3.1 exploring changes of state with increase or decrease of particle speed associated with heat transfer. (L)</p> <p>K – SB3.2 exploring through a variety of models (e.g., gumdrops and toothpicks) how atoms may bond together into well-defined molecules or bond together in large arrays. (L)</p> <p>K – SB3.3 making models of molecules.</p> <p>K – SB3.4 calculating the numbers of particles in an atom using the atomic #, mass #, and overall charge.</p> <p>K – SB4.1 demonstrating and defining centripetal force and acceleration .</p> <p>K - SB4.2 exploring molecular attraction and energy in different types of matter.</p> <p>K - SB4.3 relating molecular attraction and energy in different types of matter.</p>
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	<p>K - SB4.4 explaining a chemical reaction.</p> <p>K - SB4.5 describing chemical bonding.</p> <p>K - SB4.6 comparing and contrasting covalent and ionic bonds writing and naming simple chemical formulas, interpreting and writing simple balanced chemical equations.</p>
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