



<b>STANDARD 2:</b> <b>Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)</b>  <b>2.1 Students know that matter has characteristic properties, which are related to its composition and structure.</b>																			
As students in grades 5-8 extend their knowledge, what they know and are able to do includes	IPS Ch. 1	IPS Ch. 2	IPS Ch. 3	IPS Ch. 4	IPS Ch. 5	IPS Ch. 6	IPS Ch. 7	IPS Ch. 8	IPS Ch. 9	IPS Ch. 10	IPS Ch. 11	IPS Ch. 12	FM&E Ch. 1	FM&E Ch. 2	FM&E Ch. 3	FM&E Ch. 4	FM&E Ch. 5	FM&E Ch. 6	FM&E Ch. 7
· examining, describing, comparing, measuring, and classifying objects based on common physical and chemical properties (for example, states of matter, mass, volume, electrical charge, temperature, density, boiling points, pH, magnetism, solubility);			X	X	X	X													
· separating mixtures of substances based on their properties (for example, solubility, boiling points, magnetic properties, densities);			X	X	X	X													
· classifying and describing matter in terms of elements, compounds, mixtures, atoms, and molecules (for example, copper is an element, water is a compound, air is a mixture); and					X	X	X	X											
· developing simple models to explain observed properties of matter (for example, using a particle model to account for the solubility of a substance).								X											
<b>2.2 Students know that energy appears in different forms, and can move (be transferred) and change (be transformed).</b>  As students in grades 5-8 extend their knowledge, what they know and are able to do includes																			
· measuring quantities associated with energy forms (for example, temperature, mass, speed, distance, electrical charge, current, voltage); and													X	X	X	X		X	X

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• describing qualitative and quantitative relationships, using data and observations and graphs, associated with energy transfer or energy transformation (for example, speed of object vs. height of ramp; length of string vs. pitch of sound; electric current vs. volume of gas produced in electrolysis, with length of time kept constant).													X	X	X	X	X	X	X
<p><b>2. 3 Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged.</b></p> <p>As students in grades 5-8 extend their knowledge, what they know and are able to do includes</p>																			
• identifying and classifying factors causing change within a system (for example, force, light, heat);			X	X	X	X							X	X	X	X	X	X	X
• identifying and predicting what will change and what will remain unchanged when matter experiences an external force or energy change (for example, boiling a liquid; comparing the force, distance, and work involved in simple machines);		X	X	X	X	X							X	X	X	X	X	X	X
• observing and gathering data to support the concept of conservation of mass within a closed system (for example, precipitation reaction, forming mixtures, gas production);		X	X	X	X	X													
• describing, measuring (for example, temperature, mass, volume, melting point of a substance) and calculating quantities before and after a chemical or physical change within a system (for example, temperature change, mass change, specific heat); and		X	X	X	X	X												X	X
• describing, measuring (for example, time, distance, mass, force) and calculating quantities that characterize moving objects and their interactions within a system (for example, force, velocity, acceleration, potential energy, kinetic energy).															X	X			X