## Introductory Physical Science/ Force, Motion, and Energy Correlation to the Colorado Physical Science Content Standards Grades 5-8 Adopted 5-10-95; Amended 11-9-95

STANDARD 1: Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.																			
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
• identifying and evaluating alternative explanations and procedures;	X	X	X	X	X	X	X	X	X	X	x	x	X	X	X	X	X	X	X
• using examples to demonstrate that scientific ideas are used to explain previous observations and to predict future events (for example, plate tectonics and future earthquake activity);	x	x	x	x	x	x	X	x	X	X	x	x	x	x	x	X	X	X	x
• asking questions and stating hypotheses that lead to different types of scientific investigations (for example, experimentation, collecting specimens, constructing models, researching scientific literature);	x	x	x	X	x	x	X	x	X	X	X	X	x	x	x	X	X	X	X
• creating a written plan for an investigation;	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
• using appropriate tools, technologies, and measurement units to gather and organize data;	X	X	X	X	X	X	X	X	X	X	x	x	X	X	X	X	X	X	x
• interpreting and evaluating data in order to formulate conclusions;	x	X	X	X	X	X	X	X	X	X	x	x	X	X	X	X	X	X	X
• communicating results of their investigations in appropriate ways (for example, written reports, graphic displays, oral presentations);	x	x	x	x	x	x	X	x	X	X	x	x	x	x	x	X	X	X	X
• using metric units in measuring, calculating, and reporting results;	X	X	X	X	X	X	X	X	X	X	x	x	X	X	X	X	X	X	X
• explaining that scientific investigations sometimes result in unexpected findings that lead to new questions and more investigations; and	x	X	x	X	X	X	X	x	X	X	X	X	X	x	x	X	X	X	X
• giving examples of how collaboration can be useful in solving scientific problems and sharing findings.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

**STANDARD 2:** 

Physical Science: Students know and understand common properties, forms, and changes in matter and energy. (Focus: Physics and Chemistry)

2.1 Students know that matter has characteristic properties, which are related to its composition and structure.

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											
2. 2 Students know that energy appears in different forms, and can move (be transferred) and change (be transformed).																			
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
2. 3 Students understand that interactions can produce changes in a system, although the total quantities of matter and energy remain unchanged.																			
As students in grades 5-8 extend their knowledge, what they know and are able to do includes																			
• 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
<ul> <li>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);</li> </ul>		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