



# Middle School Physical Science

## Essential Standards

### Essential Standards Quick Guide

Essential standards are explicitly taught, assessed more than once, and targeted for intervention if students have not yet reached proficiency. Assessments can be both formative and summative. Interventions are implemented within the classroom to support students who are not yet proficient.

All Idaho Content Standards are detailed in the Essential Standards Extended Guide. For the complete standards booklets and for further clarification on supporting content, explanations of standards, and assessment limits please utilize the Idaho Content Standards page. [Idaho Content Science Standards](#).

<b>Essential Standards</b>
<b>Matter and Its Interactions</b>
MS-PS-1.1 Develop models to describe the atomic composition of simple molecules
MS-PS-1.2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
MS-PS-1.4 Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
MS-PS-1.5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.
<b>Motion and Stability: Forces and Interactions</b>
MS-PS-2.1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
MS-PS-2.2 Plan and conduct 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 object.
MS-PS-2.4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and dependent the masses of interacting objects.
MS-PS-2.5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.
<b>Energy</b>
MS-PS-3.1 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.

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MS-PS-3.2 Develop a model to describe the relationship between the relative positions of objects interacting at a distance and the relative potential energy in the system.
MS-PS-3.3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
MS-PS-3.5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
<b>Waves</b>
MS-PS-4.1 Use diagrams of a simple wave to explain that (1) a wave has a repeating pattern with a specific amplitude, frequency, and wavelength, and (2) the amplitude of a wave is related to the energy in the wave.
MS-PS-4.2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.

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**For Questions Contact**

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