

2019 Minnesota Academic Standards in Science

8th Grade		
Strand	Code	Benchmark
Exploring Phenomena or Engineering Problems	8P.1.1.1.1	Ask questions about locations of common elements on the periodic table to note patterns in the properties of similarly grouped elements.
	8P.1.1.1.2	Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.
	8P.1.2.1.1	Plan and conduct an investigation of changes in pure substances when thermal energy is added or removed and relate those changes to particle motion.
	8P.1.2.1.2	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.
	8P.1.2.1.3	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.
	8P.1.2.1.4	Plan and conduct an investigation to determine how the temperature of a substance is affected by the transfer of energy, the amount of mass, and the type of matter.
Looking at data and empirical evidence to understand phenomena or solve problems	8P.2.1.1.1	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
	8P.2.1.1.2	Construct and interpret graphical displays of data to describe the relationship of kinetic energy to the mass and speed of an object.

	8P.2.2.1.1	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.
	8P.2.2.1.2	Create a computer program to illustrate the transfer of energy within a system where energy changes form.
Developing possible explanations of phenomena or designing solutions to engineering problems	8P.3.1.1.1	Develop models to describe the atomic composition of simple molecules and crystals.
	8P.3.1.1.2	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.
	8P.3.1.1.3	Develop and revise a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.
	8P.3.1.1.4	Develop and use a model to qualitatively describe that waves are reflected, absorbed, or transmitted through various materials.
	8P.3.2.1.1	Construct an explanation based on evidence and scientific principles of a common phenomenon that can be explained by the motions of molecules.
	8P.3.2.2.1	Construct, test and modify a device that either releases or absorbs thermal energy by chemical processes.
	8P.3.2.2.2	Design a solution to a problem involving the motion of two colliding objects using Newton's 3rd Law.
	8P.3.2.2.3	Design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

Communicating reasons, arguments and ideas to others	8P.4.1.1.1	Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.
	8P.4.1.1.2	Compare and evaluate evidence to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.
	8P.4.2.1.1	Gather and evaluate information from multiple sources to describe that synthetic materials come from natural resources and impact society.
	8P.4.2.1.2	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.