

Physical Science

Matter and Its Interactions PSCI.PS1

- 1 Use a model to explain the changes of state for solids, liquids, gases, and plasma using the kinetic molecular theory and heat flow considerations. PSCI.PS1.1
- 2 Carry out an investigation to graphically represent the relationship(s) among pressure, volume, and temperature of a gas. PSCI.PS1.2
- 3 Engage in an argument from evidence to explain physical and chemical changes. PSCI.PS1.3
- 4 Use a model to predict the relative properties of elements on the periodic table. PSCI.PS1.4
- 5 Predict how elements may combine using the patterns of electrons in the outermost energy level. PSCI.PS1.5
- 6 Predict the formulas of binary ionic compounds using the periodic table. PSCI.PS1.6
- 7 Develop, or use, a model to illustrate the claim that atoms and mass are conserved during a chemical reaction (i.e., balancing chemical equations). PSCI.PS1.7
- 8 Develop, or use, a model to classify a substance as acidic, basic, or neutral by using pH tools and appropriate indicators. PSCI.PS1.8

Motion and Stability: Forces and Interactions PSCI.PS2

- 1 Use mathematics and computational thinking to graphically represent how various factors (e.g., position, time, direction of force) affect one-dimensional kinematics parameters (e.g., distance, displacement, speed, velocity, acceleration). PSCI.PS2.1
- 2 Use mathematics and computational thinking to solve problems involving constant velocity and constant acceleration in one-dimension. PSCI.PS2.2
- 3 Plan and carry out an investigation to gather evidence, and provide a mathematical explanation, about the relationship among force, mass, and acceleration using $F=ma$. PSCI.PS2.3
- 4 Use mathematical reasoning and computational thinking to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system. PSCI.PS2.4

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- 5** Design, evaluate, and refine a device that minimizes the force on an object during a collision. [PSCI.PS2.5](#)
 - 6** Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field. [PSCI.PS2.6](#)
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Energy [PSCI.PS3](#)

- 1** Use mathematical and computational thinking to solve problems regarding the work-energy theorem and power using various forms of energy (e.g., kinetic, gravitational potential, elastic potential). [PSCI.PS3.1](#)
 - 2** Plan and conduct an investigation to provide evidence that thermal energy will move as heat between objects of two different temperatures, resulting in a more uniform energy distribution among objects. [PSCI.PS3.2](#)
 - 3** Design, build, and refine a device within design constraints that has a series of simple machines to transfer energy and/or do mechanical work. [PSCI.PS3.3](#)
 - 4** Plan and carry out an investigation to examine the relationships among kinetic, potential, and total energy within a closed system (i.e., the Law of Conservation of Energy). [PSCI.PS3.4](#)
 - 5** Design, build, and construct simple series circuits and simple parallel circuits using Ohm's Law. [PSCI.PS3.5](#)
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Waves and Their Applications in Technologies for Information Transfer [PSCI.PS4](#)

- 1** Construct an explanation to compare and contrast the properties of transverse and longitudinal waves, including examples of each. [PSCI.PS4.1](#)
- 2** Obtain, evaluate, and communicate information to describe the similarities and differences across the electromagnetic spectrum, including devices used to measure the characteristics of the electromagnetic spectrum. [PSCI.PS4.2](#)