Tennessee Science

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

	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
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
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