South Carolina Science

Physics

Motion and Stability: Forces and Interactions PS2	**1** **Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.** P-PS2-1
	2 **Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.** P-PS2-2
	3 **Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the effect of a force on a macroscopic object during a collision.** P-PS2-3
	4 **Use mathematical representations of Newton's law of gravitation and Coulomb's law to describe and predict the gravitational and electrostatic forces between objects.** P-PS2-4
	5 **Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.** P-PS2-5
	6 **Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.** P-PS2-6
Energy PS3	**1** **Create a computational model to calculate the change in the energy of one component in a system when the following are known: 1) the change in energy of the other component(s) and 2) the energy flowing in and out of the system.** P-PS3-1
	2 **Develop and use models to illustrate that energy can be explained by the combination of motion and position of objects at the macroscopic scale and the motion and position of particles at the microscopic scale** P-PS3-2
	3 **Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.** P-PS3-3
	5 **Develop and use a model to illustrate the forces between two objects and the changes in energy of the objects due to their interaction through electric or magnetic fields.** P-PS3-5

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Waves and Their Applications in Technologies for Information Transfer PS4

1. **Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.** P-PS4-1

2. **Design, evaluate, and refine a solution for improving how digital devices store and transmit information.** P-PS4-2

3. **Evaluate the claims, evidence, and reasoning about how electromagnetic radiation can be described either by a wave model or a particle model, and in some situations one model is more useful than the other.** P-PS4-3

4. **Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.** P-PS4-4

5. **Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.** P-PS4-5