Oklahoma Science

Physics

Matter and Its Interactions PS1	**8** Develop models to support explanations of the changes in stability and composition of the nucleus of the atom and the associated energies released during the processes of fission, fusion, and radioactive decay. PH.PS1.8
Motion and Stability: Forces and Interactions PS2	**1** Analyze and interpret data to support the claim that Newton's second law of motion describes the mathematical relationship among the mass, acceleration, and net force acting on macroscopic objects. PH.PS2.1
	2 Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when no net external force acts on the system. PH.PS2.2
	3 Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.* PH.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. PH.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. PH.PS2.5
Energy PS3	**1** Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. PH.PS3.1
	2 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as either motions of particles or energy stored in fields. PH.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.* PH.PS3.3
	4 Plan and conduct an investigation to provide evidence that the transfer of thermal energy between components in a closed system results in a more uniform distribution among the components in the system (second law of thermodynamics). PH.PS3.4

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	5 **Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.** PH.PS3.5
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.** PH.PS4.1
	2 **Evaluate questions about the advantages and disadvantages of using digital transmission and storage of information.*** PH.PS4.2
	3 **Develop an argument for how scientific evidence supports the explanation that electromagnetic radiation can be described either by the wave model or the particle model, and in some situations one model is more useful than the other.** PH.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.** PH.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.*** PH.PS4.5