Grade 8 Physical Science Checklist

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Related Schoolwide Learner Outcomes

Matter and Its Interactions

- ☐ MS-PS1-1: I can make models to show how atoms are arranged in simple molecules (like ammonia), as well as extended structures (like sodium chloride).
- ☐ MS-PS1-2: I can tell you if a chemical reaction has occurred by looking closely at data on the properties of substances before and after they interact with each other.
- ☐ MS-PS1-3: I can gather and understand information to explain that synthetic materials are actually made from natural resources.
- ☐ MS-PS1-4: I can make a model that predicts and describes how a pure substance changes when thermal energy is added or taken away.
- ☐ MS-PS1-5: I can make and use a model to show that the total number of atoms does not change during a chemical reaction. I know that mass is conserved during a chemical reaction.
- ☐ MS-PS1-6: I can build, test, and modify a device that either releases or absorbs thermal energy by chemical processes.

Motion and Stability: Forces and Interactions

- ☐ MS-PS2-1: I can apply Newton's Third Law to make a solution to a problem involving the motion of two colliding objects.
- ☐ MS-PS2-2: I can plan an investigation to prove that the change in an object's motion depends on the total forces on the object and the mass of the object.
- ☐ MS-PS2-3: I can ask questions about data to figure out what affects the strength of electric and magnetic forces.
- ☐ MS-PS2-4: I can tell you what I know about gravitational interactions. I know that they depend on the masses of interacting objects.
- ☐ MS-PS2-5: I can carry out and evaluate an investigation to show that fields exist between objects that exert forces on each other even though the objects do not touch.

Energy

- ☐ MS-PS3-1: I can make and interpret graphs to show the relationship of kinetic energy to the mass of an object, and the relationship of kinetic energy to the speed of an object.
- ☐ MS-PS3-2: I can make a model to demonstrate that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

- ☐ MS-PS3-3: I can design, construct, and test a device that will either minimize or maximize thermal energy transfer.
- ☐ MS-PS3-4: I can conduct experiments to find out more about the relationships among energy transfer, matter, mass, and kinetic energy of the particles as measured by the temperature of the sample.
- ☐ MS-PS3-5: I can develop and present arguments to demonstrate that when the kinetic energy of an object changes, energy is transferred to or from the object.

Waves and Their Technologies for Information Transfer

- ☐ MS-PS4-1: I can talk about what models for waves would look like. I can describe how the amplitude of a wave is related to the energy in that wave.
- ☐ MS-PS4-2: I can make a model to show that waves are reflected, absorbed, or transmitted through different materials.
- ☐ MS-PS4-3: I can use scientific and technical information to prove that digitized signals are a more reliable way to encode and communicate information than analog signals.

Engineering Design

- ☐ MS-ETS1-1: I can develop a successful solution to a design problem using scientific principles. I can compare the pros and cons of my solution in order to determine if it is reasonable.
- ☐ MS-ETS1-2: I can test my design solutions to determine whether or not they will solve the problem.
- ☐ MS-ETS1-3: I can use the data gathered from tests to determine which design solution will best solve the problem.
- ☐ MS-ETS1-4: I can develop a model of the design that can be tested and modified to create a successful prototype.

Grade 8 Integrated Science Checklist

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Related Schoolwide Learner Outcomes

Life Science: Heredity and Variation of Traits

- ☐ MS-LS3-1: I can create a model to show how genetic mutations on chromosomes can affect an organism's proteins. I can explain that these changes may be helpful, harmful, or have no effect on the organism.

Life Science: Biological Evolution - Unity and Diversity

- ☐ MS-LS4-1: I can look closely at patterns in fossil records. I know that these records show the existence, diversity, extinction, and changes in life forms throughout history.
- ☐ MS-LS4-2: I can make inferences about evolutionary relationships by comparing modern organisms to fossil organisms.
- ☐ MS-LS4-3: I can look closely at and compare pictures that show the early growth of different organisms. I can use this information to identify relationships across multiple species.
- ☐ MS-LS4-4: I can tell you how and why some traits help an individual survive and reproduce.
- ☐ MS-LS4-5: I can talk about the ways that technology has made it possible to increase desired traits in organisms.
- ☐ MS-LS4-6: I can use math to help explain how natural selection can lead to more or less of specific traits over time.

Earth and Space Science: Earth's Place in the Universe

- ☐ MS-ESS1-1: I can use the Earth-sun-moon system to describe lunar phases, eclipses of the sun and moon, and seasons.
- ☐ MS-ESS1-2: I can describe the role of gravity in the motions within galaxies and the solar system.
- ☐ MS-ESS1-3: I can use data to compare properties of objects in the solar system.
- ☐ MS-ESS1-4: I can explain how the geologic time scale is used to organize Earth's 4.6 billion-year-old history.

Earth and Space Science: Earth and Human Activity

- ☐ MS-ESS3-4: I can talk about the ways that the increases in human population and use of natural resources impact Earth's systems.

Physical Science: Motion and Stability - Forces and Interactions

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Physical Science: Energy

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