|  |  |  |
| --- | --- | --- |
| Physical Science 8 | | **Standards-Based Education Priority Standards** |
| **8th Grade** | | |
| *Matter and Its Interactions* | | |
| MS-PS1-1 | Develop models to describe the atomic composition of simple molecules and extended structures. | |
| MS-PS1-2 | Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. | |
| MS-PS1-3 | Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. | |
| MS-PS1-4 | Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. | |
| MS-PS1-5 | Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. | |
| MS-PS1-6 | Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. | |
| *Forces and Interactions* | | |
| MS-PS2-1 | Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects. | |
| MS-PS2-2 | Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object. | |
| MS-PS2-3 | sk questions about data to determine the factors that affect the strength of electrical and magnetic forces. | |
| MS-PS2-4 | Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. | |
| MS-PS2-5 | Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. | |
| *Energy* | | |
| MS-PS3-1 | Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object. | |
| MS-PS3-2 | Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system. | |
| MS-PS3-3 | Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. | |
| MS-PS3-4 | Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. | |
| MS-PS3-5 | Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object. | |
| *Waves and Their Applications* | | |
| MS-PS4-1 | Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. | |
| MS-PS4-2 | Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. | |
| MS-PS4-3 | Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy. | |
| *Engineering* | | |
| MS-ETS1-1 | Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. | |
| MS-ETS1-2 | Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. | |
| MS-ETS1-3 | Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. | |
| MS-ETS1-4 | Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. | |
| *Literacy in Science* | | |
| 6-8.RST.1 | Cite specific textual evidence to support analysis of science and technical texts. | |
| 6-8.RST.2 | Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. | |
| 6-8.RST.9 | Compare and contrast the information gained from experiments, simulations, video or multimedia sources with that gained from reading a text on the same topic. | |
| 6-8.WHST.1 | Write arguments focused on discipline-specific content. | |
| 6-8.WHST.7 | Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. | |
| 6-8.WHST.9 | Draw evidence from informational texts to support analysis, reflection, and research. | |