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| MYP Physical Science 8 | | **Standards-Based Education Priority Standards** |
| **8th Grade** | | |
| *Matter and Its Interactions* | | |
| A1  MS-PS1-1 | Develop models to describe the atomic composition of simple molecules and extended structures. | |
| C2  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. | |
| D3  MS-PS1-3 | Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. | |
| A4  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. | |
| A5  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. | |
| A6  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* | | |
| D7  MS-PS2-1 | Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects. | |
| B8  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. | |
| A9  MS-PS2-3 | Ask questions about data to determine the factors that affect the strength of electrical and magnetic forces. | |
| A10  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. | |
| B11  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* | | |
| C12  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. | |
| A13  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. | |
| B14  MS-PS3-3 | Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. | |
| B15  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. | |
| A16  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* | | |
| A17  MS-PS4-1 | Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. | |
| A18  MS-PS4-2 | Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. | |
| D19  MS-PS4-3 | Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. | |
| *Engineering* | | |
| D20  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. | |
| C21  MS-ETS1-2 | Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. | |
| C22  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. | |
| C23  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* | | |
| D24  6-8.RST.1 | Cite specific textual evidence to support analysis of science and technical texts. | |
| B25  6-8.RST.3 | Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. | |
| C26  6-8.RST.7 | Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). | |
| B27  6-8.WHST.1 | Write arguments focused on discipline-specific content. | |
| B28  6-8.WHST.5 | With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. | |
| D29  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. | |
| D30  6-8.WHST.8 | Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. | |