seaperch

Next Generation Science Standards (Grade 5)

Performance Expectations   *www.seaperch.org*

Legend

●	Standard addressed in **SeaPerch Build Guide**
○	Standard could be addressed by **additional activities during the SeaPerch build**
△	Standard could be met at a **SeaPerch competition**

Note: Only standards groups where at least one standard is met are included in the mapping below.

Matter & Its Interactions

Indicator	Indicator Statement	Addressed
5-PS1-1	Develop a model to describe that matter is made of particles too small to be seen.	
5-PS1-2	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	○
5-PS1-3	Make observations and measurements to identify materials based on their properties.	
5-PS1-4	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	

Motion & Stability: Forces & Interactions

Indicator	Indicator Statement	Addressed
5-PS2-1	Support an argument that the gravitational force exerted by Earth on objects is directed down.	○

Earth's Systems

Indicator	Indicator Statement	Addressed
5-ESS2-1	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	
5-ESS2-2	Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	○ **3.1**

Earth & Human Activity

Indicator	Indicator Statement	Addressed
5-ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	○△

Engineering Design

Indicator	Indicator Statement	Addressed
3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	●
3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem	●
3-5-ETS1-3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	●

Next Generation Science Standards (Grade 6-8)

Performance Expectations

Legend

●	Standard addressed in **SeaPerch Build Guide**
○	Standard could be addressed by **additional activities during the SeaPerch build**
△	Standard could be met at a **SeaPerch competition**

Note: Only standards groups where at least one standard is met are included in the mapping below.

Motion and Stability: Forces and Interactions

Indicator	Indicator Statement	Addressed
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	Ask questions about data to determine the factors that affect the strength of electric 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

Indicator	Indicator Statement	Addressed
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.	●

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Indicator	Indicator Statement	Addressed
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 kinetic energy of an object changes, energy is transferred to or from the object.	

Earth & Human Activity

Indicator	Indicator Statement	Addressed
MS-ESS3-1	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.	
MS-ESS3-2	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	◯
MS-ESS3-3	Apply scientific principles to design a method for monitoring and minimizing human impact.	◯
MS-ESS3-4	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	◯
MS-ESS3-5	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	

Engineering Design

Indicator	Indicator Statement	Addressed
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.	⬤◯△

Indicator	Indicator Statement	Addressed
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.	●○△