Missouri Science

Grade 4

Adopted 2016

Motion and Stability: Forces and Interactions PS2

A. Forces and Motion PS2.A

a. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. 4.PS2.A.A

b. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. 4.PS2.A.B

B. Types of Interaction PS2.B

b. Predict how changes in either the amount of force applied to an object or the mass of the object affects the motion (speed and direction) of the object. 4.PS2.B.B

a. Plan and conduct a fair test to compare and contrast the forces (measured by a spring scale in Newtons) required to overcome friction when an object moves over different surfaces (i.e., rough/smooth). 4.PS2.B.A

Energy PS3

A. Definitions of Energy PS3.A

A. Use evidence to construct an explanation relating the speed of an object to the energy of that object. 4.PS3.A

B. Conservation of Energy and Energy Transfer PS3.B

a. Provide evidence to construct an explanation of an energy transformation(e.g. temperature change, light, sound, motion, and magnetic effects) 4.PS3.B.A

b. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. 4.PS3.B.B

C. Relationship Between Energy and Forces PS3.C

C. Use models to explain that simple machines change the amount of effort force and/or direction of force. 4.PS3.C

Waves and Their Applications in technologies for Information Transfer PS4

A. Wave Properties PS4.A

A. Develop a model of waves to describe patterns in terms of amplitude or wavelength and that waves can cause objects to move. 4.PS4.A

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Structure and Function LS1.A

and Processes LS1

A. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and plant reproduction. 4.LS1.A

D. Information Processing LS1.D

D. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. 4.LS1.D

Earth's Place in the Universe ESS1

C. The History of Planet Earth ESS1.C

C. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. 4.ESS1.C

Earth's Systems ESS2

A. Earth Materials and Systems ESS2.A

A. Plan and conduct scientific investigations or simulations to provide evidence how natural processes (e.g. weathering and erosion) shape Earth's surfaces. 4.ESS2.A

B. Plate Tectonics and Large-Scale Systems ESS2.B

B. Analyze and interpret data from maps to describe patterns of Earth's features. 4.ESS2.B

Earth and Human Activity ESS3

A. Natural Resources ESS3.A

A. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. 4.ESS3.A

Engineering Design ETS1

A. Defining and Delimiting Engineering Problems ETS1.A

A. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. 4.ETS1.A

B. Developing Possible Solutions ETS1.B

B. 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. 4.ETS1.B

C. Optimizing the Solution Process ETS1.C

C. 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. 4.ETS1.C