Iowa Science

Sixth Grade

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. 6-PS1-4	**1** **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.** 6-PS1-4
Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. 6-PS1-6	**2** **Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.** 6-PS1-6
Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. 6-PS3-3	**3** **Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.** 6-PS3-3
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. 6-PS4-1	**4** **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.** 6-PS4-1
Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. 6-PS4-2	**5** **Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.** 6-PS4-2

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. 6-PS4-3	**6** **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.** 6-PS4-3
Conduct an investigation to provide evidence that living things are made of cells; either one cell or many, different numbers and types of cells. 6-LS1-1	**7** **Conduct an investigation to provide evidence that living things are made of cells; either one cell or many, different numbers and types of cells.** 6-LS1-1
Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. 6-LS1-2	**8** **Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.** 6-LS1-2
Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. 6-LS1-3	**9** **Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.** 6-LS1-3
Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. 6-LS1-8	**10** **Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.** 6-LS1-8
Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is	**11** **Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's history.** 6-ESS1-4

used to organize Earth's history. 6-ESS1-4

Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. 6-ESS2-1

12 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. 6-ESS2-1

Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. 6-ESS2-2

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Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. 6-ESS2-3

14 Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. 6-ESS2-3

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. 6-ESS3-1

15 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. 6-ESS3-1

Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. 6-ESS3-2

16 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. 6-ESS3-2

Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. 6-ETS1-1	**17** **Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, considering relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.** 6-ETS1-1
Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. 6-ETS1-2	**18** **Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.** 6-ETS1-2
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. 6-ETS1-3	**19** **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.** 6-ETS1-3
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. 6-ETS1-4	