Iowa Science

Earth and Space Science

Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation, supplying Earth with energy. HS-ESS1-1	**1 Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation, supplying Earth with energy.** HS-ESS1-1
Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe. HS-ESS1-2	**2 Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.** HS-ESS1-2
Communicate scientific ideas about the way stars, over their life cycle, produce elements. HS-ESS1-3	**3 Communicate scientific ideas about the way stars, over their life cycle, produce elements.** HS-ESS1-3
Use mathematical or computational representations to predict the motion of orbiting objects in the solar system. HS-ESS1-4	**4 Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.** HS-ESS1-4
Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to	**5 Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.** HS-ESS1-5

explain the ages of crustal rocks. HS-ESS1-5

Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history. HS-ESS1-6

6 Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history. HS-ESS1-6

Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean floor features. HS-ESS2-1

7 Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean floor features. HS-ESS2-1

Analyze geoscience data to make the claim that one change to Earth's surface can create feedback that causes changes to other Earth systems. HS-ESS2-2

8 Analyze geoscience data to make the claim that one change to Earth's surface can create feedback that causes changes to other Earth systems. HS-ESS2-2

Develop a model based on evidence of Earth's interior to describe and explain the cycling of matter by thermal convection. HS-ESS2-3

9 Develop a model based on evidence of Earth's interior to describe and explain the cycling of matter by thermal convection. HS-ESS2-3

Use a model to describe how variations in the flow of energy into and out of Earth's systems result in climate changes and trends. HS-ESS2-4

10 Use a model to describe how variations in the flow of energy into and out of Earth's systems result in climate changes and trends. HS-ESS2-4

Plan and conduct an investigation of the properties of fluids (i.e. wind and water) and

11 Plan and conduct an investigation of the properties of fluids (i.e. wind and water) and their effects on Earth materials and surface processes. HS-ESS2-5

their effects on Earth materials and surface processes. HS-ESS2-5	
Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere. HS-ESS2-6	**12 Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.** HS-ESS2-6
Construct an argument based on evidence about the simultaneous coevolution in Earth's systems and life on Earth. HS-ESS2-7	**13 Construct an argument based on evidence about the simultaneous coevolution in Earth's systems and life on Earth.** HS-ESS2-7
Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and climate changes and trends have influenced human civilizations. HS-ESS3-1	**14 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and climate changes and trends have influenced human civilizations.** HS-ESS3-1
Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. HS-ESS3-2	**15 Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.** HS-ESS3-2
Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity. HS-ESS3-3	**16 Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.** HS-ESS3-3

Evaluate or refine a technological solution that reduces society's influence on natural systems. HS-ESS3-4

17 **Evaluate or refine a technological solution that reduces society's influence on natural systems.** HS-ESS3-4

Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate changes and trends and associated future impacts to Earth systems. HS-ESS3-5

18 **Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate changes and trends and associated future impacts to Earth systems.** HS-ESS3-5

Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified over time. HS-ESS3-6

19 **Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified over time.** HS-ESS3-6