Tennessee Science

Fourth Grade

Energy 4.PS3	1	**Use evidence to explain the cause and effect relationship between the speed of an object and the energy of an object.** 4.PS3.1
	2	**Carry out an investigation to show how faster speeds during a collision can cause a bigger change in the shape of the colliding objects.** 4.PS3.2
	3	**Describe how stored energy can be converted into another form for practical use in a system.** 4.PS3.3
Waves and their Application in Technologies for Information Transfer 4.PS4	1	**Use a model of a simple wave to describe amplitude, wavelength, and explain how waves can add or cancel each other as they cross.** 4.PS4.1
	2	**Construct an explanation for how the colors of available light sources and the bending of light waves determine what we see.** 4.PS4.2
	3	**Investigate how lenses enhance human senses and digital devices (e.g., computers and cell phones) use waves to receive and decode information over distances.** 4.PS4.3
Ecosystems: Interactions, Energy, and Dynamics 4.LS2	1	**Develop and use models to illustrate the flow of matter through a food web/food chain beginning with sunlight and including producers, consumers, and decomposers.** 4.LS2.1
	2	**Using information about the roles of organisms (producers, consumers, decomposers) in an ecosystem, evaluate how those roles are interconnected in a food web, and communicate how the organisms are continuously able to meet their needs in a stable food web.** 4.LS2.2
	3	**Develop and use models to determine the effects of introducing a species to, or removing a species from, an ecosystem and how either one can damage the balance of an ecosystem.** 4.LS2.3
	4	**Analyze and interpret data about changes in the environment to explain how some organisms may survive and reproduce, some may not survive, others move to new locations, yet others move into the transformed environment.** 4.LS2.4
Biological Change: Unity an	1	**Obtain, evaluate, and communicate information about what a fossil is and ways a ossil can provide information about the past, such as a) the nature of nvironments and b) animals that existed long ago but no longer exist.** 4.LS4.1

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Earth's Place in the Universe 4.ESS1	1	**Generate and support a claim with evidence that over long periods of time, erosion (i.e., weathering and transportation) and deposition have changed landscapes and created new landforms.** 4.ESS1.1
	2	**Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.** 4.ESS1.2
Earth's Systems 4.ESS2	1	**Collect and analyze data from observations to provide evidence that rocks, soils, and sediments are broken into smaller pieces through mechanical weathering (e.g., frost wedging, abrasion, tree root wedging) and are transported by water, ice, wind, gravity, and vegetation.** 4.ESS2.1
	2	**Explain how data from maps and other reliable sources can be used to determine patterns for the locations of mountain ranges, deep ocean trenches, volcanoes, and earthquakes.** 4.ESS2.2
	3	**Provide examples to support the claim that organisms affect the physical characteristics of their regions (e.g., plants' roots hold soil in place, beaver shelters alter the flow of water, paved surfaces affect runoff, leaves from trees can obstruct waterways).** 4.ESS2.3
Earth and Human Activity 4.ESS3	1	**Obtain and combine information to describe that energy, fuels, and materials are derived from natural resources and that some resources are renewable (e.g., sunlight, wind, water) and some are not (e.g., fossil fuels and minerals).** 4.ESS3.1
	2	**Engage in an argument, using evidence from research, that human activity (e.g., farming, mining, building) can affect the land and ocean in positive and/or negative ways.** 4.ESS3.2
Engineering Design 4.ETS1	1	**Categorize the effectiveness of design solutions by testing and comparing them to specified criteria and constraints.** 4.ETS1.1
Links Among Engineering, Technology, Science, and Society 4.ETS2	1	**Explain how existing technologies have been designed or improved to increase their benefits, to decrease known risks, and to meet societal demands (e.g., artificial limbs, seatbelts, cell phones).** 4.ETS2.1