

Hawaii Alternate Assessment for NGSS Science Key Ideas / Essence Statements / Meets PLD / EARTH SPACE SCIENCES / Grades 5 and 8

Updated October 4, 2022

The NGSS Vision: Proficient learners demonstrate scientific literacy through the application of the practices, crosscutting concepts, and core ideas of science and engineering to engage in discussions on science-related issues; to be critical consumers of scientific information related to their everyday lives; and to continue to learn about science throughout their lives. (Adapted from Framework for K-12 Science Education, p. 9)

Earth and Space Sciences							
Domain	Sub-Domain	Grade 5 Key Idea	Essence	Meets	Grade 8 Key Idea	Essence	Meets
ESS1: Earth's Place in the Universe	ESS1.A: The Universe and Its Stars	Stars range greatly in size and distance from Earth and this can explain their relative brightness.	5-ESS1-1 Identify that the closer a light source is, the brighter it appears and use data to show that for two equally bright stars, the closer one will appear brighter.	Use data to show that the closer a star is to Earth, the brighter the star appears	The solar system is part of the Milky Way, which is one of many billions of galaxies.	MS-ESS1-1 Identify day, night, and the four seasons using a model or diagram and relate these changes, as well as moon phases, to Earth's tilt, rotation and revolution around the sun.	Use a model to identify Earth's seasons and relate them to Earth's tilt and revolution around the sun.
						MS-ESS1-2 Identify gravity as the attractive force that pulls objects in the solar system together and describe the movement of objects based on the gravitational force of the sun.	Describe that the motions of all objects in the solar system occur due to the gravitational force of the sun.
	ESS1.B: Earth and the Solar System	The Earth's orbit and rotation, and the orbit of the moon around the Earth cause observable patterns.	5-EES1-2 Use data to identify or predict patterns in the size of shadows, in the phases of the moon, or in lengths of day and night.	Use data to identify patterns in the size of shadows, in the phases of the moon, or in lengths of day and night.	The solar system contains many varied objects held together by gravity. Solar system models explain and predict eclipses, lunar phases, and seasons.	MS-ESS1-3 Identify the location of the sun, Earth, and Earth's moon in the solar system and use data1 to order the planets or compare properties of objects in the solar system at various scales.	Use data to order the planets based on their size or distance from the sun.
	ESS1.C: The History of Planet Earth	Certain features on Earth can be used to order events that have occurred in a landscape.	4-ESS1-1 Identify that lower rock layers are oldest and the locations of fossils in rock layers provide evidence of changes in the environment over time.	Determine the environment of a given rock layer based on fossil evidence.	Rock strata and the fossil record can be used as evidence to organize the relative occurrence of major historical events in Earth's history.	MS-ESS1-4 Use fossils and rock layers as a way to organize Earth's history and use data to estimate a fossil's relative age based on its location in a column of rock layers.	Identify the relative ages of fossils based on their locations in a column of rock layers.
ESS2: Earth's Systems	ESS2.A: Earth Materials and Systems	Four major Earth systems interact. Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, organisms, and gravity break rocks, soils, and sediments into smaller pieces and move them around.	4-ESS2-1 Identify sources of erosion and the resulting or predicted changes to the landscape caused by erosion and weathering in a given a scenario.	Identify examples of changes to the landscape caused by erosion and/or weathering.	Energy flows and matter cycles within and among Earth's systems, including the sun and Earth's interior as primary energy sources. Plate tectonics is one result of these processes.	MS-ESS2-1 Identify the rock cycle and different types of rocks and describe how heat from the Earth's core and the Sun powers Earth processes.	Describe how heat from Earth's core powers the rock cycle and how heat from the sun powers the weather systems leading to storms and erosion.
			5-ESS2-1 Using a visual aid or model, identify the result of the components of two Earth systems interacting	Given a model, identify the result of the components of two Earth systems interacting.		MS-ESS2-2 Recognize and classify slow and fast processes that modify Earth's surface features, and describe the process that contributed to a change to Earth's surface when given a scenario.	Recognize that surface processes such as erosion, movement of water, weathering, and the deposition of sediment can modify surface features, such as shorelines and mountains, or create new features, such as canyons.

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Domain	Sub-Domain	Grade 5 Key Idea	Essence	Meets	Grade 8 Key Idea	Essence	Meets
ESS2: Earth's Systems (cont.)	ESS2.B: Plate Tectonics and Large-Scale System Interactions	Earth's physical features occur in patterns, as do earthquakes and volcanoes. Maps can be used to locate features and determine patterns in those events.	4-ESS2-2 Identify the locations of volcanoes, mountain ranges and potential earthquake sites given a map, and use patterns to predict the likely locations of volcanoes relative to plate boundaries.	Use a map to identify the pattern of earthquakes, mountain ranges, or volcanoes relative to plate boundaries.	Plate tectonics is the unifying theory that explains movements of rocks at Earth's surface and geological history. Maps are used to display evidence of plate movement.	MS-ESS2-3 Use continent shapes, data, and fossil evidence to link plate movement to changes to Earth's surface such as earthquakes and mountain formation.	Use data, usually pictorial information including maps, to link Earth changes such as mountain formation and earthquakes to the movement of Earth's plates.
	ESS2.C: The Roles of Water in Earth's Surface	Most of Earth's water is in the ocean and much of the Earth's fresh water is in glaciers or underground.	5-ESS2-2 Identify where fresh water and salt water are typically found and use data to show the amount and distribution of fresh and salt water.	Use data to show that the ocean contains most of Earth's water.	Water cycles among land, ocean, and atmosphere, and is propelled by sunlight and gravity. Density variations of sea water drive interconnected ocean currents. Water movement causes weathering and erosion, changing landscape features.	MS-ESS2-4 Identify the parts of the water cycle and use models to explain the role of the sun in the cycling of water through Earth's systems.	Use a model of the water cycle to explain the role of the sun in the water cycle.
			3-ESS2-1 Identify common weather characteristics and use data to identify weather patterns and make predictions.	Use a simple graphical display or data table (limited to 3 or 4 data points) to identify a factor such as the time of the year when it rained the most or when it was hottest.		Complex interactions determine local weather patterns and influence climate, including the role of the ocean.	MS-ESS2-5 Use objects, pictures, and data to identify local weather conditions and patterns and correlate changes in weather to the movement of air masses.
	ESS2.D: Weather and Climate	Climate describes patterns of typical weather conditions over different scales and variations. Historical weather patterns can be analyzed.	3-ESS2-2 Identify the components of climate and describe and compare climates in different parts of the world.	Describe the climate of a region of the world using weather data.	MS-ESS2-6 Match a climate to an area or region and describe how climate is influenced by location on Earth, the shape of the land, and distance from water.		Also See MS-ESS2-5 Carries over to Grade 11 Life Science (Bio EOC)
			See 4-ESS2-1			See MS-LS4.A and MS-LS4.D Carries over to Grade 11 Life Science (Bio EOC)	
ESS2.E: Biogeology	Living things can affect the physical characteristics of their environment.						
ESS3: Earth and Human Activity	ESS3.A: Natural Resources	Energy and fuels humans use are derived from natural sources and their use affects the environment. Some resources are renewable over time, others are not.	4-ESS3-1 Classify energy sources as renewable or nonrenewable and identify the effect of using a particular type of energy on the environment.	Identify how the use of a given energy source could impact the environment.	Humans depend on Earth's land, ocean, atmosphere, and biosphere for different resources, many of which are limited or not renewable. Resources are distributed unevenly around the planet as a result of past geologic processes.	MS-ESS3-1 Identify the source of a natural resource, that some resources are not renewable, and that using non-renewable resources will decrease their availability for future use.	Use data to show that specific resources are limited.
	ESS3.B: Natural Hazards	A variety of hazards result from natural processes; humans cannot eliminate hazards but can reduce their impacts.	3-ESS3-1 Identify the impact of weather hazards, explain that humans can take steps to reduce the impact, and use data to determine whether a solution for reducing the impact or improving safety is effective	Identify ways to help reduce the impact of a weather hazard, including steps to be taken for personal safety during hazardous weather.	Given a natural hazard, choose a design that would lessen the impact of the hazard.	Mapping the history of natural hazards in a region and understanding related geological forces.	MS-ESS3-2 Identify natural hazards and classify them as predictable or not predictable and use data to describe the effect of a natural hazard or identify a safety measure to mitigate the effect of the hazard.
4-ESS3-2 Identify the potential impact of a natural hazard and choose a design solution that lessens the impact of these hazards, including finding the most effective solution when given options.							

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ESS3: Earth and Human Activity (cont.)	ESS3.C: Human Impacts on Earth Systems	Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments.	5-ESS3-1 Identify the effects of pollution on air or water quality and explain steps that can be taken to protect or clean up the environment.	Identify actions humans can take to protect the environment.	Human activities have altered the biosphere, sometimes damaging it, although changes to environments can have different impacts for different living things. Activities and technologies can be engineered to reduce people's impacts on Earth.	MS-ESS3-3 Identify ways in which human activity can alter the environment and determine solutions to environmental problems caused by human activity.	Match human activities with their effect on Earth.
						MS-ESS3-4 Recognize resources that humans need for survival, identify human activities that use resources, and predict the effect of increasing human populations on an environment.	Use evidence to link an environmental change to human population increase.
	ESS3.D: Global Climate Change				Human activities affect global warming. Decisions to reduce the impact of global warming depend on understanding climate science, engineering capabilities, and social dynamics.	MS-ESS3-5 Match human activity to factors causing gradual temperature changes, identify questions that could be answered using temperature data, and identify how rising temperatures could impact Hawai'i or other coastal areas.	Identify a question1 that could be answered using data that depicts rising temperatures over the last 100 years.

Carries over to Grade 11 Life Science (Bio EOC)