

# Hawai'i Content and Performance Standards

## 8th Grade Science Benchmarks Addressed

| Strand/<br>Standard  | Benchmark   | Lessons Addressing Benchmark   |
|--|---|--|
| <p><b>The Scientific Process: Standard 1: SCIENTIFIC INVESTIGATION:</b><br/><i>Discover, invent, and investigate using the skills necessary to engage in the scientific process.</i></p> | <p><b>SC.8.1.1</b><br/><i>Determine the link(s) between evidence and the conclusion(s) of an investigation</i></p>                            | <p><i>Convection Current (Unit 2)</i><br/><i>Determining Lava Temperatures (Unit 7)</i><br/><i>Giant Volcanoes of Mars (Unit 10)</i><br/><i>Hess's Method (Unit 4)</i><br/><i>Introduction to the Scientific Method (Unit 1)</i><br/><i>Invisible Gas, Invisible Ink (Unit 7)</i><br/><i>Lava Flows (Unit 5)</i><br/><i>Liquid Layers (Unit 2)</i><br/><i>Locating the Epicenter (Unit 8)</i><br/><i>Measuring Magma Chamber Changes (Unit 7)</i><br/><i>Pangaea Puzzle (Unit 3)</i><br/><i>Pangaea Science Theories (Unit 3)</i><br/><i>Putting Earth in its Place (Unit 2)</i><br/><i>Rate of Plate Movement (Unit 6)</i><br/><i>Recipe for Volcanoes (Unit 10)</i><br/><i>Tephra Catapults (Unit 5)</i><br/><i>Volcano Models (Unit 9)</i><br/><i>Volcanoes of Io (Unit 10)</i></p> |
|  | <p><b>SC.8.1.2</b><br/><i>Communicate the significant components of the experimental design and results of a scientific investigation</i></p> | <p><i>Convection Current (Unit 2)</i><br/><i>Determining Lava Temperatures (Unit 7)</i><br/><i>Giant Volcanoes of Mars (Unit 10)</i><br/><i>Hess's Method (Unit 4)</i><br/><i>Introduction to the Scientific Method (Unit 1)</i><br/><i>Invisible Gas, Invisible Ink (Unit 7)</i><br/><i>Lava Flows (Unit 5)</i><br/><i>Liquid Layers (Unit 2)</i><br/><i>Locating the Epicenter (Unit 8)</i><br/><i>Measuring Magma Chamber Changes (Unit 7)</i><br/><i>Pangaea Puzzle (Unit 3)</i><br/><i>Putting Earth in its Place (Unit 2)</i><br/><i>Rate of Plate Movement (Unit 6)</i><br/><i>Recipe for Volcanoes (Unit 10)</i><br/><i>Tephra Catapults (Unit 5)</i><br/><i>Volcano Models (Unit 9)</i><br/><i>Volcanoes of Io (Unit 10)</i></p>  |

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|---|---|--|
| <b>The Scientific Process: Standard 2: NATURE OF SCIENCE:</b><br><i>Understand that science, technology, and society are interrelated</i>   | <b>SC.8.2.1</b><br><i>Describe significant relationships among society, science, and technology and how one impacts the other</i> | Carbon Dioxide (Unit 8)<br>Critical Thinking: Building Near Volcanoes (Unit 9)<br>Determining Lava Temperatures (Unit 7)<br>Earth's Crust Scavenger Hunt (Unit 4)<br>GPS Mapping (Unit 7)<br>Hess's Method (Unit 4)<br>Invisible Gas, Invisible Ink (Unit 7)<br>Locating the Epicenter (Unit 8)<br>Measuring Magma Chamber Changes (Unit 7)<br>Monitoring Volcanoes Scavenger Hunt (Unit 7)<br>Monitoring Volcanoes Vocabulary (Unit 7)<br>P-Waves and S-Waves (Unit 7)<br>Pace and Compass (Unit 7)<br>Tracking Ash Plumes (Unit 8)<br>Using Satellite Images (Unit 7)<br>Volcanic Hazards and Risks (Unit 8)<br>Volcano Hazards Scavenger Hunt (Unit 8)<br>Volcano Hazards Vocabulary (Unit 8)<br>Water Tube Tiltmeters (Unit 7)<br>Waves of Light (Unit 7)<br>Waves We Measure: Electromagnetic or Mechanical? (Unit 7) |
|   | <b>SC.8.2.2</b><br><i>Describe how scale and mathematical models can be used to support and explain scientific data</i>           | GPS Mapping (Unit 7)<br>Pace and Compass (Unit 7)<br>Putting Earth in its Place (Unit 2)<br>Scale Drawing of Earth (Cross Curricular*)<br>Size of Earth (Cross Curricular*)<br>Tracking Ash Plumes (Unit 8)<br>Using Satellite Images (Unit 7)<br>Volcanoes on Other Planets (Unit 10)   |
| <b>Life and Environmental Sciences:</b><br><b>Standard 5: DIVERSITY, GENETICS, AND EVOLUTION:</b><br><i>Understand genetics and biological evolution and their impact on the unity and diversity of organisms</i> | <b>SC.8.5.1</b><br><i>Describe how changes in the physical environment affect the survival of organisms</i>                       | Bird Beak Game (Cross Curricular*)<br>Cricket Lab (Cross Curricular*)<br>Environmental Story (Cross Curricular*)<br>Environmental Vocabulary Book (Cross Curricular*)<br>Future Creature Book (Cross Curricular*)<br>Hydrothermal Vents (Cross Curricular*)<br>Native Plants and Animals (Cross Curricular*)<br>Owl Pellet Book (Cross Curricular*)  |

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|--|--|---|
| <p><b>Physical, Earth, and Space Sciences:</b><br/><b>Standard 6: NATURE OF MATTER AND ENERGY:</b></p> <p><i>Understand the nature of matter and energy, forms of energy (including waves) and energy transformations, and their significance in understanding the structure of the universe</i></p> | <p><b>SC.8.6.1</b><br/><i>Explain the relationship between the color of light and wavelength within the electromagnetic spectrum</i></p> | <p><i>Invisible Gas, Invisible Ink (Unit 7)</i><br/><i>Waves of Light (Unit 7)</i></p>  |
|  | <p><b>SC.8.6.2</b><br/><i>Explain how seismic waves provide scientists with information about the structure of Earth's interior</i></p>  | <p><i>Locating the Epicenter (Unit 8)</i><br/><i>P-Waves and S-Waves (Unit 7)</i></p>   |
|  | <p><b>SC.8.6.3</b><br/><i>Identify the characteristics and properties of mechanical and electromagnetic waves</i></p>                    | <p><i>Invisible Gas, Invisible Ink (Unit 7)</i><br/><i>Waves of Light (Unit 7)</i><br/><i>Waves We Measure: Electromagnetic or Mechanical? (Unit 7)</i></p> |
| <p><b>Physical, Earth, and Space Sciences:</b><br/><b>Standard 7: FORCE AND MOTION:</b></p> <p><i>Understand the relationship between force, mass, and motion of objects; and know the major natural forces: gravitational, electric, and magnetic</i></p>   | <p><b>SC.8.7.1</b><br/><i>Explain that every object has mass and therefore exerts a gravitational force on other objects</i></p>         | <p><i>Giant Volcanoes of Mars (Unit 10)</i><br/><i>Tides and Earth Volcanoes (Unit 10)</i><br/><i>Volcanoes of Io (Unit 10)</i></p>                         |

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| <b>Physical, Earth, and Space Sciences: Standard 8: EARTH AND SPACE SCIENCE:</b><br><i>Understand the Earth and its processes, the solar system, and the universe and its contents</i> | <b>SC.8.8.1</b><br><i>Compare the characteristics of the three main types of rocks</i>                                     | <i>Identifying Rocks (Unit 7)</i><br><i>Rocks and the Rock Cycle Pocket Guide (Unit 7)</i>  |
|  | <b>SC.8.8.2</b><br><i>Illustrate the rock cycle and explain how igneous, metamorphic, and sedimentary rocks are formed</i> | <i>Identifying Rocks (Unit 7)</i><br><i>Rocks and the Rock Cycle Pocket Guide (Unit 7)</i>  |
|  | <b>SC.8.8.3</b><br><i>Describe how the Earth's motions and tilt on its axis affect the seasons and weather patterns</i>    | <i>Hazards of the Tilt-a-World (Unit 9)</i>   |
|  | <b>SC.8.8.4</b><br><i>Explain how the sun is the major source of energy influencing climate and weather on Earth</i>       | <i>Exploring Volcanic Hazards: Gas and Vog (Unit 9)</i><br><i>Hazards of the Tilt-a-World (Unit 9)</i>  |
|  | <b>SC.8.8.5</b><br><i>Explain the concepts of continental drift and plate tectonics</i>                                    | <i>Active Earth Scavenger Hunt (Unit 3)</i><br><i>Active Earth Vocabulary (Unit 3)</i><br><i>Convection Current (Unit 2)</i><br><i>Decoding Plate Names (Unit 3)</i><br><i>Drawing Magma (Unit 5)</i><br><i>Earth's Crust Scavenger Hunt (Unit 4)</i><br><i>Earth's Crust Vocabulary (Unit 4)</i><br><i>Hawaii Volcanoes Scavenger Hunt (Unit 6)</i><br><i>Hawaii Volcanoes Vocabulary (Unit 6)</i><br><i>Hess's Method (Unit 4)</i><br><i>Mollie Magma (Unit 4)</i><br><i>Pacific Plate Movement (Unit 6)</i><br><i>Pangaea Puzzle (Unit 3)</i><br><i>Pangaea Science Theories (Unit 3)</i><br><i>Plate Tectonics (Unit 3)</i><br><i>Rate of Plate Movement (Unit 6)</i><br><i>Table Tectonics (Unit 4)</i><br><i>Toothpaste Chain Volcanoes (Unit 6)</i><br><i>Volcanoes Scavenger Hunt (Unit 5)</i><br><i>Volcano: the Storyboard (Unit 6)</i><br><i>Volcanoes Vocabulary (Unit 5)</i> |
|  | <b>SC.8.8.6</b><br><i>Explain the relationship between density and convection currents in the ocean and atmosphere</i>     | <i>Convection Current (Unit 2)</i><br><i>Determining Density (Unit 2)</i><br><i>Exploring Volcanic Hazards: Gas and Vog (Unit 9)</i><br><i>Liquid Layers (Unit 2)</i>   |
|  | <b>SC.8.8.7</b><br><i>Describe the physical characteristics of oceans</i>  | <i>Hess's Method (Unit 4)</i><br><i>Table Tectonics (Unit 4)</i><br><i>Tides and Earth Volcanoes (Unit 10)</i>  |

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| <b>Physical, Earth, and Space Sciences: Standard 8: EARTH AND SPACE SCIENCE:</b><br><i>Understand the Earth and its processes, the solar system, and the universe and its contents</i> | <b>SC.8.8.8</b><br><i>Describe the composition of objects in the galaxy</i>                                     | <i>Clay Model Earth (Unit 2)</i><br><i>Convection Current (Unit 2)</i><br><i>Determining Density (Unit 2)</i><br><i>Earth's Elements and Temperatures (Unit 2)</i><br><i>Liquid Layers (Unit 2)</i><br><i>Planet Earth Scavenger Hunt (Unit 2)</i><br><i>Planet Earth Vocabulary (Unit 2)</i><br><i>Recipe for Volcanoes (Unit 10)</i><br><i>Tour of the Universe (Unit 10)</i> |
|  | <b>SC.8.8.9</b><br><i>Explain the predictable motions of the Earth and moon</i>                                 | <i>Hazards of the Tilt-a-World (Unit 9)</i><br><i>Tides and Earth Volcanoes (Unit 10)</i>   |
|  | <b>SC.8.8.10</b><br><i>Compare the characteristics and movement patterns of the planets in our solar system</i> | <i>Tour of the Universe (Unit 10)</i><br><i>Volcanoes Beyond Earth Scavenger Hunt (Unit 10)</i><br><i>Volcanoes on Other Planets (Unit 10)</i>  |
|  | <b>SC.8.8.11</b><br><i>Describe the major components of the universe</i>  | <i>Tour of the Universe (Unit 10)</i>   |
|  | <b>SC.8.8.12</b><br><i>Describe the role of gravitational force in the motions of planetary systems</i>         | <i>Tides and Earth Volcanoes (Unit 10)</i><br><i>Volcanoes of Io (Unit 10)</i>  |

\* Cross-curricular lessons are available on the Ola Ka Honua: Volcanoes Alive website at: [http://www.gi.alaska.edu/volcanoes\\_alive/](http://www.gi.alaska.edu/volcanoes_alive/)