Grade 8

Scientific Inquiry

Standard 8-1: The student will demonstrate an understanding of technological design and scientific inquiry, including process skills, mathematical thinking, controlled investigative design and analysis, and problem solving.

Indicators		**PLT Activities**
8-1.1	Design a controlled scientific investigation.	● 4cd Sounds Around ● 29 Rain Reasons ● 41 How Plants Grow ☐ 48 Field, Forest, and Stream
8-1.2	Recognize the importance of a systematic process for safely and accurately conducting investigations	● 4cd Sounds Around ● 29 Rain Reasons ● 41 How Plants Grow ● 48 Field, Forest, and Stream ☐ 70 Soil Stories
8-1.3	Construct explanations and conclusions from interpretations of data obtained during a controlled scientific investigation.	● 4cd Sounds Around ● 29 Rain Reasons ● 41 How Plants Grow ● 48 Field, Forest, and Stream
8-1.4	Construct explanations and conclusions from interpretations of data obtained during a controlled scientific investigation.	● 4cd Sounds Around ● 29 Rain Reasons ● 41 How Plants Grow ● 48 Field, Forest, and Stream
8-1.5	Explain the importance of and requirements for replication of scientific investigations.	☐ 4cd Sounds Around ☐ 29 Rain Reasons ☐ 41 How Plants Grow
8-1.6	Use appropriate tools and instruments (including convex lenses, plane mirrors, color filters, prisms, and slinky springs) safely and accurately when conducting a controlled scientific investigation.	☐ 4cd Sounds Around ● 29 Rain Reasons ● 41 How Plants Grow ☐ 48 Field, Forest, and Stream
8-1.7	Use appropriate safety procedures when conducting investigations.	☐ 4cd Sounds Around ☐ 29 Rain Reasons ☐ 41 How Plants Grow ☐ 48 Field, Forest, and Stream ☐ 70 Soil Stories

● Standard Fully Addressed
☐ Standard Partially Addressed or Reinforced

Earth's Biological History

Standard 8-2: The student will demonstrate an understanding of Earth's biological diversity over time. (Life Science, Earth Science)

Indicators		**PLT Activities**
8-2.1	Explain how biological adaptations of populations enhance their survival in a particular environment.	☐ 6 Picture This! ● 10 Charting Diversity ● 11 Can It Be Real? ☐ 20 Environmental Exchange Box ☐ 21b Adopt A Tree ☐ 22v Trees as Habitats ☐ 23 The Fallen Log ● 25 Birds and Worms ● 26 Dynamic Duos ● 29 Rain Reasons ☐ 31 Plant a Tree ☐ 43 Have Seeds, Will Travel ☐ 45 Web of Life ● 49bc Tropical Treehouse ☐ 71 Watch On Wetlands
8-2.2	Summarize how scientists study Earth's past environment and diverse life-forms by examining different types of fossils (including molds, casts, petrified fossils, preserved and carbonized remains of plants and animals, and trace fossils).	
8-2.3	Explain how Earth's history has been influenced by catastrophes (including the impact of an asteroid or comet, climatic changes, and volcanic activity) that have affected the conditions on Earth and the diversity of its life-forms.	
8-2.4	Recognize the relationship among the units—era, epoch, and period—into which the geologic time scale is divided	
8-2.5	Illustrate the vast diversity of life that has been present on Earth over time by using the geologic time scale.	
8-2.6	Infer the relative age of rocks and fossils from index fossils and the ordering of the rock layers.	

● Standard Fully Addressed

☐ Standard Partially Addressed or Reinforced

8-2.1	Summarize the factors, both natural and man-made, that can contribute to the extinction of a species.	☐ 12 Invasive Species ☐ 14 Renewable or Not ☐ 15 A Few Of My Favorite Things ☐ 49bc Tropical Treehouse ☐ 50 400- Acre Wood ☐ 71 Watch On Wetlands ☐ 80 Nothing Succeeds Like Succession ☐ 86 Our Changing World ☐ 88 Life on the Edge ☐ 90 Native Ways ☐ 92 A Look at Lifestyles

Earth's Structure and Processes

Standard 8-3: The student will demonstrate an understanding of materials that determine the structure of Earth and the processes that have altered this structure. (Earth Science)

Indicators		**PLT Activities**
8-3.1	Summarize the three layers of Earth—crust, mantle, and core—on the basis of relative position, density, and composition.	
8-3.2	Explain how scientists use seismic waves—primary, secondary, and surface waves—and Earth's magnetic fields to determine the internal structure of Earth.	
8-3.3	Infer an earthquake's epicenter from seismographic data.	
8-3.4	Explain how igneous, metamorphic, and sedimentary rocks are interrelated in the rock cycle.	
8-3.5	Summarize the importance of minerals, ores, and fossil fuels as Earth resources on the basis of their physical and chemical properties.	● 14 Renewable or Not? ● 15 A Few of My Favorite Things ● 37 Reduce, Reuse, Recycle ● 39bc Energy Sleuths ● 52 A Look at Aluminum ● 53 On the Move ● 70 Soil Stories ☐ 81ab Living with Fire ● 82 Resource-Go-Round ● 83 A Peek at Packaging ☐ 84 The Global Climate ☐ 85 In the Driver's Seat

		☐ 90 Native Ways ☐ 92 A Look at Lifestyles ☐ 94 By the Rivers of Babylon
8-3.6	Explain how the theory of plate tectonics accounts for the motion of the lithospheric plates, the geologic activities at the plate boundaries, and the changes in landform areas over geologic time.	
8-3.7	Illustrate the creation and changing of landforms that have occurred through geologic processes (including volcanic eruptions and mountain-building forces).	
8-3.8	Explain how earthquakes result from forces inside Earth.	
8-3.9	Identify and illustrate geologic features of South Carolina and other regions of the world through the use of imagery (including aerial photography and satellite imagery) and topographic maps.	☐ 20 Environmental Exchange Box

Astronomy: Earth and Space Systems

Standard 8-4: The student will demonstrate an understanding of the characteristics, structure, and predictable motions of celestial bodies. (Earth Science)

Indicators		**PLT Activities**
8-4.1	Summarize the characteristics and movements of objects in the solar system (including planets, moons, asteroids, comets, and meteors).	
8-4.2	Summarize the characteristics of the surface features of the Sun: photosphere, corona, sunspots, prominences, and solar flares.	☐ 84 The Global Climate
8-4.3	Explain how the surface features of the Sun may affect Earth.	☐ 84 The Global Climate
8-4.4	Explain the motions of Earth and the Moon and the effects of these motions as they orbit the Sun (including day, year, phases of the Moon, eclipses, and tides).	

8-4.5	Explain how the tilt of Earth's axis affects the length of the day and the amount of heating on Earth's surface, thus causing the seasons of the year.	☐ 29 Rain Reasons
8-4.6	Explain how gravitational forces are influenced by mass and distance.	
8-4.7	Explain the effects of gravity on tides and planetary orbits.	
8-4.8	Explain the difference between mass and weight by using the concept of gravitational force.	
8-4.9	Recall the Sun's position in the universe, the shapes and composition of galaxies, and the distance measurement unit (light year) needed to identify star and galaxy locations.	
8-4.10	Compare the purposes of the tools and the technology that scientists use to study space (including various types of telescopes, satellites, space probes, and spectroscopes).	

Forces and Motion

Standard 8-5: The student will demonstrate an understanding of the effects of forces on the motion of an object. (Physical Science)

Indicators		**PLT Activities**
8-5.1	Use measurement and time-distance graphs to represent the motion of an object in terms of its position, direction, or speed.	☐ 53 On the Move
8-5.2	Use the formula for average speed, v = d/t, to solve real-world problems	☐ 53 On the Move
8-5.3	Analyze the effects of forces (including gravity and friction) on the speed and direction of an object.	
8-5.4	Predict how varying the amount of force or mass will affect the motion of an object.	
8-5.5	Analyze the resulting effect of balanced and unbalanced forces on an object's motion in terms of magnitude and direction	

8-5.6	Summarize and illustrate the concept of inertia.	

Waves

Standard 8-6: The student will demonstrate an understanding of the properties and behaviors of waves. (Physical Science)

Indicators		**PLT Activities**
8-6.1	Recall that waves transmit energy but not matter.	
8-6.2	Distinguish between mechanical and electromagnetic waves	
8-6.3	Summarize factors that influence the basic properties of waves (including frequency, amplitude, wavelength, and speed).	
8-6.4	Summarize the behaviors of waves (including refraction, reflection, transmission, and absorption).	
8-6.5	Explain hearing in terms of the relationship between sound waves and the ear.	☐ 4cd Sounds Around
8-6.6	Explain sight in terms of the relationship between the eye and the light waves emitted or reflected by an object.	
8-6.7	Explain how the absorption and reflection of light waves by various materials result in the human perception of color.	
8-6.8	Compare the wavelength and energy of waves in various parts of the electromagnetic spectrum (including visible light, infrared, and ultraviolet radiation).	