

Options EHS Earth Science	Scope and Sequence
Unit Lesson	Objectives
The Earth's Land	
Early Earth History	Identify characteristic Precambrian and Paleozoic life-forms.
	Draw conclusions about how species adapted to changing environments in Precambrian time and the Paleozoic Era.
	Describe changes in Earth and its life-forms at the end of the Paleozoic Era.
Fossils	
	List the conditions necessary for fossils to form.
	Describe several processes of fossil formation.
	Explain how fossil correlation is used to determine rock ages.
	Determine how fossils can be used to explain changes in Earth's surface, life forms, and environments.
Relative Ages of Rocks	
	Describe methods used to assign relative ages to rock layers.
	Interpret gaps in the rock record.
	Give an example of how rock layers can be correlated with other rock layers.
Middle and Recent Earth History	
	Compare and contrast characteristic life-forms in the Mesozoic and Cenozoic Eras.
	Explain how changes caused by plate tectonics affected organisms during the Mesozoic Era.
	Identify when humans first appeared on Earth.
Earth's Interior	
	Explain how geologists learn about Earth's inner structures.
	Identify the characteristics of Earth's crust, mantle, and core.

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	Convection and Mantle	<p>Explain how heat is transferred.</p> <p>Identify what causes convection currents.</p> <p>Describe convection currents in Earth's mantle.</p>
	The Rock Cycle	<p>Describe two ways rocks have been used by humans.</p> <p>Describe four processes that shape Earth's features.</p> <p>Describe how each type of rock changes into another type as it moves through the rock cycle.</p> <p>List two characteristics of rock that are used to help classify it.</p>
	Restless Continents	<p>Describe Wegner's hypothesis of continental drift.</p> <p>Explain how sea-floor spreading provides a way for continents to move.</p> <p>Describe how new oceanic lithosphere forms at mid-ocean ridges.</p> <p>Explain how magnetic reversals provide evidence for sea-floor spreading.</p>
	Theory of Plate Tectonics	<p>Summarize the theory of plate tectonics.</p> <p>Describe the processes and features that occur at the three types of plate boundaries.</p> <p>Explain how movement in the mantle is related to plate motion.</p> <p>Science Practice: Examine a map to identify Earth's major tectonic plates.</p>
	Deforming the Earth's Crust	<p>Describe two types of stress that deform rocks.</p> <p>Describe three major types of folds.</p>

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		Explain the differences between the three major types of faults.
		Identify the most common types of mountains.
		Explain the difference between uplift and subsidence.
	Forces in Earth's Crust	
		Explain how stress in the crust changes Earth's surface.
		Describe where faults are usually found and why they form.
		Identify the land features that result from plate movement.
	Earthquakes and Seismic Waves	
		Describe how the energy of an earthquake travels through Earth.
		Identify the scales used to measure the strength of an earthquake.
		Explain how scientists locate the epicenter of an earthquake.
	Volcanoes and Plate Tectonics	
		Identify where Earth's volcanic regions are located and explain why they are found there.
		Explain how hot spot volcanoes form.
	Weathering and Erosion	
		Compare and contrast weathering and erosion.
		Distinguish between chemical and physical weathering.
		Describe the effects of natural erosion on the environment.
		Explain the impact of artificial erosion on the environment.
		Skills used: create graph, map, chart
<b>The Earth's Atmosphere</b>		
	Structure and Composition of the Atmosphere	

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		Describe the composition of Earth's atmosphere.
		Describe the importance of the atmosphere to living things.
		Identify properties of air, including pressure and density.
		Explain how altitude affects air pressure and density.
		Distinguish the four main layers of the atmosphere.
	Atmospheric Pollution	
		Overview the composition and function of each layer of the atmosphere.
		Identify various common atmospheric pollutants.
		Differentiate between primary and secondary pollutants.
		Examine the effects of pollution on health.
		Skills used: evaluate the validity of an explanation
	Weather Forecasting	
		Describe basic elements of meteorology.
		Describe what information can be gained from a weather map.
	Lab: Weather Patterns	
		Identify weather systems and fronts utilizing a weather map.
		Examine the influence of atmospheric conditions on weather patterns.
		Utilize weather station data to analyze weather patterns.
	Factors That Affect Climate	
		Explain what causes seasons.
		Explain how various factors affect weather and climate.
	A History of Global Climate Change	

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		Compare current and past global climate trends.
		Explain how long-term global climate shifts impact Earth's ecosystems.
		Describe the effects of greenhouse gases on the atmosphere.
		Analyze various theories related to global warming.
		Skills used: compare and contrast support and opposition
	Test	
<b>The Earth's Waters</b>		
	Water on Earth	Describe how Earth's water is distributed.
		Explain how Earth's water moves through the water cycle.
	Water Erosion	Explain how water erosion is mainly responsible for shaping the surface of the land.
		Describe some of the land features that are formed by water erosion and deposition.
		Describe the cause of groundwater erosion.
	Changing Waterways	Describe naturally occurring changes to waterways.
		Evaluate ways humans impact waterways.
		Propose alternative practices to reduce human impact on waterways.
	Groundwater	Describe the location and importance of the water table.
		Assess the consequences of overuse and contamination of groundwater.
		Explain how human use of groundwater has changed over time.

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		Skills used: determining independent and dependent variables
	Lab: Effects of Human Activity on Freshwater Resources	Identify sources of freshwater pollution. Model the effect of pollutants on the quality of freshwater resources. Predict the effect of human activity on the health of a freshwater ecosystem.
	Ocean Water	Locate Earth's five oceans. Describe the composition of ocean water. Distinguish the three main sections of the ocean's floor. Distinguish the three ocean zones.
	Ocean Circulation	Identify causes of waves, currents, and tides. Describe tides as a source of energy. Describe changes that affect ocean circulation.
	Characteristics of the Seafloor	Describe the process of seafloor spreading. Describe evidence that supports seafloor spreading. Explain what occurs at deep-ocean trenches.
	Global Connection: Water Management and Katrina	Analyze the effect of canals and levees on wetlands.
	Test	

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<b>The Earth in Space</b>		
	Gravity and Motion	<p>Identify what determines the strength of the force of gravity between two objects.</p> <p>Describe two factors that keep the moon and Earth in orbit.</p>
	The Solar System	<p>Compare the Earth-centered and Sun-centered models of the solar system.</p> <p>Explain that gravity holds the planets in their orbits around the Sun.</p>
	Earth in Space	<p>Demonstrate how Earth moves in space.</p> <p>Explain what causes the cycle of seasons on Earth.</p>
	Test	
<b>Space and Earth</b>		
	Systems of the Biosphere	<p>Describe Earth's systems in terms of energy, matter, time, and space.</p> <p>Explain the interactions between Earth's systems.</p>
	The Earth-Sun-Moon System	<p>Explain how Earth moves in space.</p> <p>Explain what causes the phases of the moon.</p> <p>Describe solar and lunar eclipses.</p> <p>Explain what causes tides.</p>
	Space Technology	<p>Describe the history and future of space exploration.</p>

**Unit Lesson**

**Objectives**

Identify the role of technology in space exploration.

Test