

Independence School District Curriculum Unit Guide

Grade Level	7	Unit of Study	Earths Systems/Weather and Climate	Time Frame	October-March
Priority Standards/ Supporting Standards	<ol style="list-style-type: none"> 1. Describe how the movement of crustal plates can cause earthquakes and volcanic eruptions that can result in mountain building and trench formation. (<i>Inside Earth</i> 1.3 pg. 18-22, 1.4 pg. 23-29, 1.5 pg. 32-36, 2.1 pg. 44-50, 3.1 pg. 82-85, 3.4 pg. 99-105) 5.2.B.c 2. Describe the methods used to estimate geologic time and the age of the Earth (e.g. techniques used to date rocks and rock layers, presence of fossils). (<i>Earth's Changing Surface</i> 4.1 pg. 110-116, 4.2 pg. 117-121, 4.3 pg. 123-126, 4.4 pg. 127-129, 4.6 pg. 134-145, Skills Lab pg. 122) 5.2.D.a 3. Use rock and fossil evidence to make inferences about the age, history, changing life forms and environment of the Earth (i.e. changes in successive layers of sedimentary rock and the fossils contained within them, similarities between fossils in different geographic locations, similarities between fossils and organisms present today, fossils of organisms indicating changes in climate, fossils of extinct organisms). (<i>Earth's Changing Surface</i> 4.1 pg. 110-116, 4.2 pg. 117-121, 4.3 pg. 123-126, 4.4 pg. 127-129, 4.6 pg. 134-145, Skills Lab pg. 122) 5.2.D.b 4. Explain and trace the possible paths of water through the hydrosphere, geosphere, and atmosphere (i.e., the water cycle: evaporation, condensation, precipitation, surface run-off/groundwater flow). 5.2.E.a 5. Relate the different forms water can take (i.e., snow, rain, sleet, fog, clouds, dew, humidity) as it moves through the water cycle to atmospheric conditions (i.e., temperature, pressure, wind direction and speed, humidity) at a given geographic location. 5.2.E.b 6. Explain how the differences in surface temperature, due to the different heating and cooling rates of water and soil, affect the temperature and movement of the air above. 5.2.F.a 7. Identify weather conditions associated with cold fronts and warm fronts. 5.2.F.c 8. Differentiate between weather and climate. 5.2.F.g 9. Identify factors that affect climate (e.g., latitude, altitude, prevailing wind currents, amount of solar radiation). 5.2.F.h 10. Describe the affect of human activities (e.g., landfills, use of fertilizers and herbicides, farming, septic systems) on the quality of water. 5.3.A.b <ul style="list-style-type: none"> • Describe the components of soil and other factors that influence soil texture, fertility, and resistance to erosion (e.g., plant roots and debris, bacteria, fungi, worms, rodents). • Describe the distinguishing properties that can be used to classify minerals (i.e., texture, smell, luster, hardness, crystal shape, streak, reaction to magnets and acids). • Describe the methods used to identify the distinguishing properties of minerals. • Classify rocks as sedimentary, igneous, or metamorphic. • Identify and describe the properties of water that make it an essential component of the Earth system (e.g., its ability to act as a solvent, its ability to remain as a liquid at most Earth temperatures). • Describe the composition of the Earth's atmosphere (i.e., mixture of gases, water and minute particles) and how it circulates as air masses. • Describe the role atmosphere (e.g., clouds, ozone) plays in precipitation, reflecting and filtering light from the Sun, and trapping heat energy emitted from the Earth's surface. 				

- *Make inferences about the formation of sedimentary rocks from their physical properties (e.g., layering and the presence of fossils indicate sedimentation).*
- *Explain how the formation of sedimentary rocks depends on weathering and erosion.*
- *Describe how weathering agents and erosional processes (i.e., force of water as it freezes or flows, expansion/contraction due to temperature, force of wind, force of plant roots, action of gravity, chemical decomposition) slowly cause surface changes that create and/or change landforms.*
- *Describe how the Earth's surface and surface materials can change abruptly through the activity of floods, rock/mudslides, or volcanoes.*
- *Identify events (earthquakes, volcanic eruptions) and the landforms created by them on the Earth's surface that occur at different plate boundaries.*
- *Explain how rock layers are affected by the folding, breaking, and uplifting of rock layers due to plate motion.*
- *Explain how heating and cooling in the mantle layer leads to the formation of metamorphic rocks and some igneous rocks.*
- *Explain and diagram the external and internal processes of the rock cycle (e.g., weathering and erosion, sedimentation, compaction, heating, recrystallization, resurfacing due to forces that drive plate motion).*
- *Explain the types of fossils and the processes by which they are formed (i.e., replacement, mold and cast, preservation, trace).*
- *Use fossil evidence to make inferences about changes on Earth and in its environment (i.e., superposition of rock layers, similarities between fossils in different geographical locations, fossils of seashells indicate the area was once underwater).*
- *Explain how thermal energy is transferred throughout the water cycle by the processes of convection, conduction, and radiation.*
- *Describe the characteristics of air masses (i.e., high/low barometric pressure, temperature) and predict their effect on the weather in a given location.*
- *Identify factors that affect weather patterns in a particular region (e.g., proximity to large bodies of water, latitude, altitude, prevailing wind currents, amount of solar radiation, location with respect to mountain ranges).*
- *Collect and interpret weather data (e.g., cloud cover, precipitation, wind speed and direction) from weather instruments and maps to explain present day weather and to predict the next day's weather.*
- *Describe the significant changes in temperature and barometric pressure may cause dramatic weather phenomena (i.e., severe thunderstorms, tornadoes, hurricanes).*
- *Relate the comparative amounts of fresh water and salt water on the Earth to the availability of water as a resource for living organisms and human activity.*
- *Analyze the ways humans affect the erosion and deposition of soil and rock materials (e.g., clearing of land, planting vegetation, paving land, construction of new buildings, building or removal of dams) and propose possible solutions.*
- *Distinguish between renewable (e.g., geothermal, hydroelectric) and nonrenewable (e.g., fossil fuel) energy sources.*
- *Provide examples of how the availability of fresh water for humans and other living organisms is dependent upon the water cycle.*

Student Proficiency Statements

- I can describe how movement of plates can cause earthquakes and volcanic eruptions that can result in mountains and trenches.
- I can describe the methods used to estimate the age of the Earth and geologic time.
- I can use rock and fossil evidence to make inferences about the age, history, changing life forms and environment of the Earth.
- I can explain and trace the path of water through the water cycle.
- I can relate the different forms water takes to the atmospheric conditions.
- I can explain how the difference in surface temperature affects the temperature of the air.
- I can identify weather associated with warm and cold fronts.
- I can differentiate between weather and climate.
- I can identify factors that affect climate.
- I can describe the effect of human activities on the quality of water.

Literacy Resources

Inside Earth textbook

Earth's Changing Surface textbook

[Plate Tectonics \(#1\)](#)

[New Force Driving Earth's Plates \(#1\)](#)

[Earth Goopy Insides Ooze Faster than Thought \(#1\)](#)

[Mount Kilauea \(#1\)](#)

[North America Lithosphere Studied \(#1,3\)](#)

[Bryce Canyon National Park Hoodoos \(#3\)](#)

[Massive Sinkhole Swallows Buildings \(#3\)](#)

[Best Places to Find Dinosaur Fossils \(#5\)](#)

[Discovering Fossils \(#5\)](#)

[Dinosized Poop \(#5\)](#)

