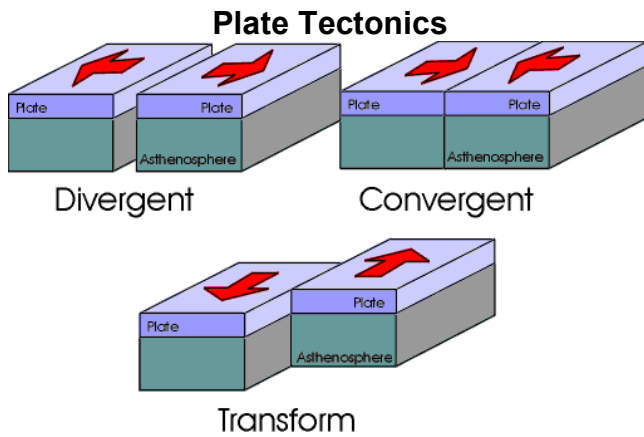
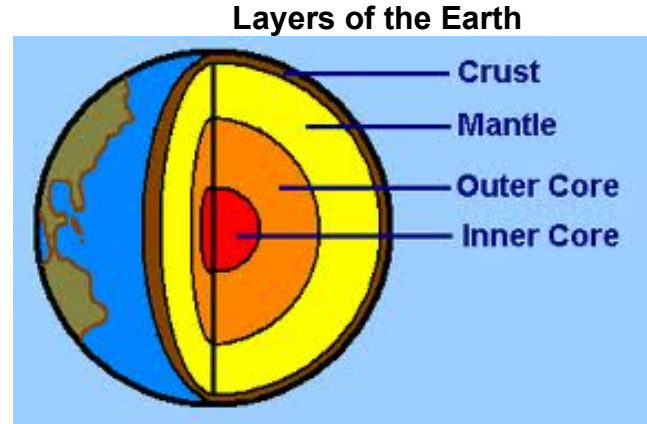


Earth Study Guide– SOL 5.7

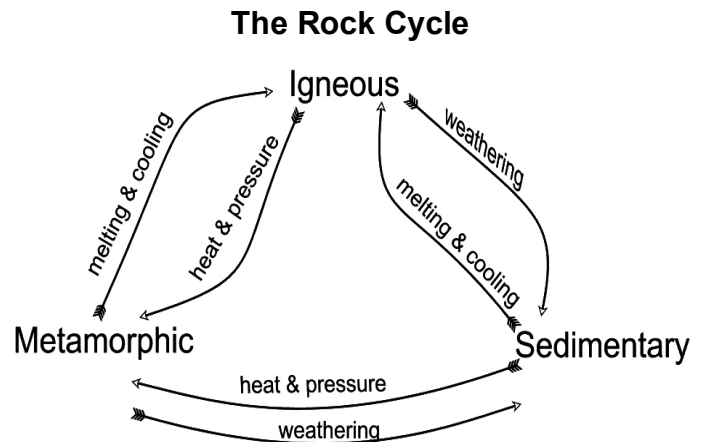
Topics include: layers of the Earth, plate tectonics, the rock cycle, fossils, weathering, erosion, deposition and human impact

- The Earth is approximately 4.6 billion years old. Scientific evidence indicates the Earth is composed of four layers. Pressure and temperature increase the deeper you go into the Earth.
- **Crust** – thin layer of solid rock 5-70 M thick
- **Mantle** – melted rock 2900 M thick
- **Outer Core** – liquid iron and nickel 2,250 M thick
- **Inner Core** – solid iron and nickel 1,280 M thick



- Earth's thermal (heat) energy causes movement of material within Earth. Large continent sized blocks move slowly about Earth's surface. These are called plates.
- **Divergent** boundaries – plates move apart (trenches- mid-ocean ridges)
- **Convergent** boundaries – plates moving towards each other. (mountains, volcanoes)
- **Transform** boundaries – plates slide past each other horizontally (earthquakes)

- Rocks have properties that can be observed, tested, and described.
- By observing the color, texture, grain size, and presence of fossils, scientists use a **classification key** to help determine the type of rock.
- Rocks move and change over time due to:
 - heat and pressure within Earth
 - weathering & erosion
 - human impact
- Rocks are classified as **Sedimentary, Igneous, and Metamorphic**



Weathering & Erosion

- Rocks are constantly being broken down **chemically** (acid rain) and **physically** (water, wind, ice).
- Smaller sediments can be moved (eroded) by wind and water and deposited in new locations as sediments. (deposition)

Vocabulary

Continental drift – the slow movement of the Earth's landmasses

Convergent boundary – where plates are pushed together creating mountains & volcanoes

Crust – the outer layer of the Earth made of solid rock

Delta – a fan shaped sediment deposit formed at the mouth of a river

Deposition – a process in which wind, water, and gravity leave eroded sediments in new locations

Divergent boundary – where plates are moving apart (creates mid-ocean ridges)

Earthquake – a shaking movement of the ground caused by a sudden shift of the Earth's crust

Fault – a location where one of the Earth's plates meets another

Fossil – the remains of an organism that lived in the past (cast, mold, and imprint fossils)

Erosion – the moving away of sediments caused by wind, ice, and WATER

Igneous rock – formed when magma cools and hardens

Inner core – the center region of the Earth made of solid iron and nickel

Lava – molten rock (magma) that has reached the Earth's surface

Magma – hot, melted rock that makes up the Earth's mantle

Mantle – the middle layer of the Earth made of melted rock

Metamorphic rock – hard matter formed by extreme heat and pressure deep within the Earth

Outer core – the layer of the Earth made of liquid iron and nickel just below the mantle

Pangaea – an ancient landmass believed to have broken up into today's continents

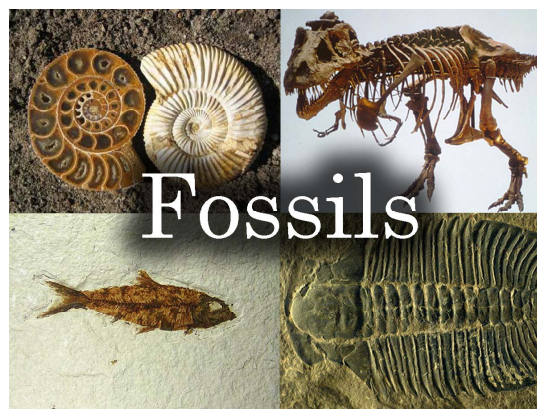
Plate tectonics- a theory that the Earth's crust is broken into distinct pieces

Sedimentary rock – formed when layers of sediment are pressed together

Sliding (transform) boundary – where plates are sliding past each other

Volcano – a mountain with vents where lava, gases, and ash erupt

Weathering – the breaking down of minerals and rocks into small sediments (wind, water, ice, and chemical reactions cause weathering)



Fossils

Fossils teach us about the past! They are mostly found in Sedimentary rock.



Below you will find some great discussion questions to ensure your child understands the concepts in this unit. 😊

SOL 5.7 – Geology

Why is Earth’s surface constantly changing? Describe some processes that contribute to these changes.

What are some properties of rocks you can use to help you identify them?

What are the three major parts of the rock cycle? Discuss how rocks are changed within the rock cycle. What causes these changes?

How are igneous rocks formed? sedimentary rocks? metamorphic rocks?

How do we know Earth is about 4.6 billion years old?

How do fossils form in sedimentary rocks?

What kind of information can scientists learn from fossils?

Why do you think there have been fewer plant fossils found than animal fossils?

Describe the structure of Earth’s layers. Is it possible for the Earth’s interior to change Earth’s exterior? Explain your answer.

What could cause an earthquake? What could cause a volcano?

How are earthquakes and volcanoes alike? How are they different?

What is the difference between divergent, convergent, and sliding plate tectonic boundaries? How are these boundaries related to changes in Earth’s surface and the ocean floor?

How can wind and water affect a rock?

How could you argue against this statement: “Rocks are too hard for water to be able to change them.”?

Think about: weathering, erosion, deposition, heat and pressure. How are these words related to rocks?

How do freezing and thawing weather a rock?

Name some ways humans are affecting Earth’s surface. How can we help control the harmful things humans are doing to the surface of Earth?