

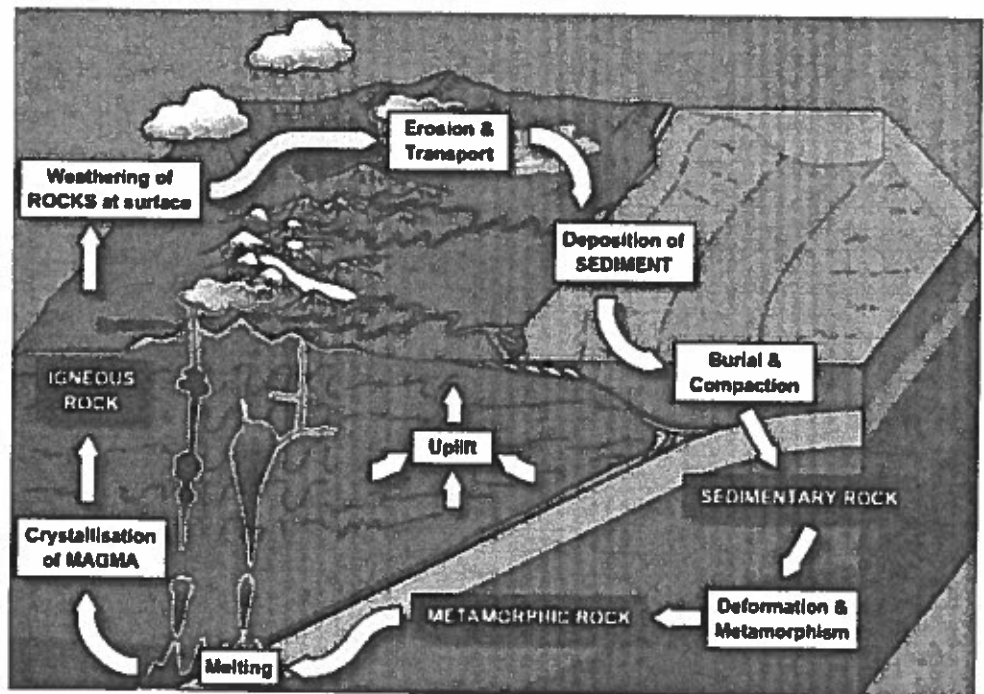
SOL 5.7 -- EARTH'S CRUST

The student will investigate and understand how Earth's surface is constantly changing. Key concepts include

- identification of rock types
- the rock cycle and how transformations between rocks occur
- Earth history and fossil evidence
- the basic structure of Earth's interior
- changes in Earth's crust due to plate tectonics
- weathering, erosion, and deposition; and
- human impact

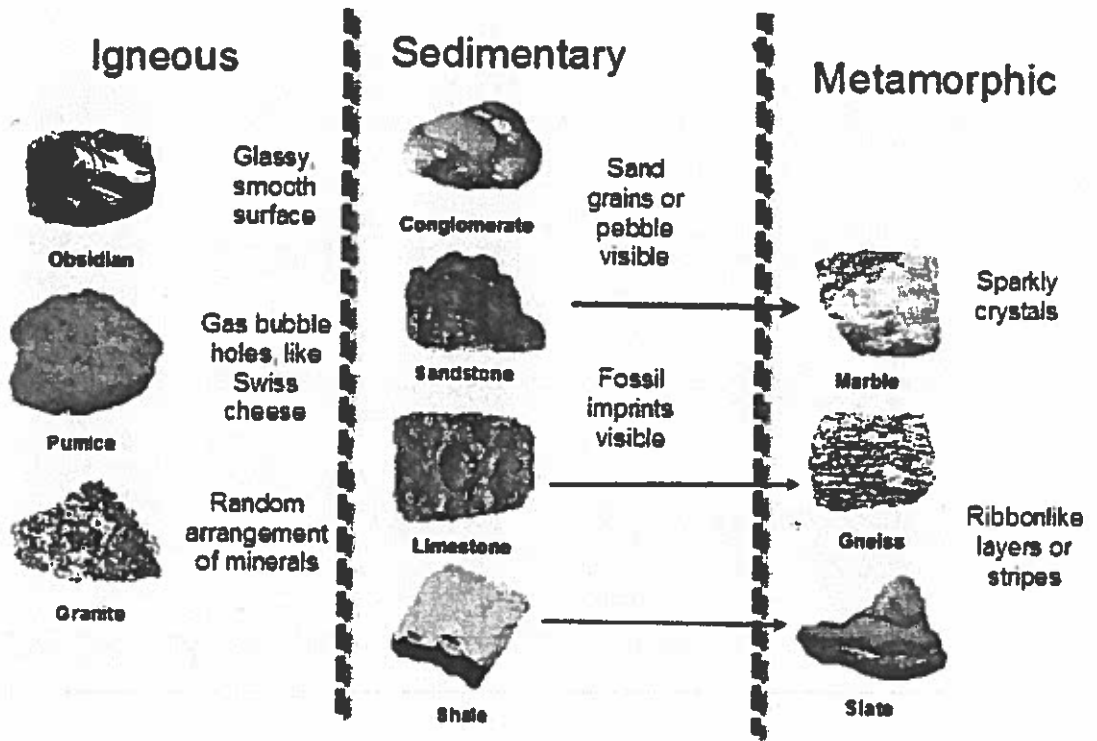
ROCK CYCLE

- Rocks move and change over time due to heat and pressure within Earth and due to weathering, erosion, and deposition at the surface. These and other processes constantly change rock from one type to another.
- Depending on how rocks are formed, they are classified as
 - sedimentary (layers of sediment cemented together)
 - igneous (melted and cooled, e.g., lava and magma)
 - metamorphic (changed by heat and pressure)

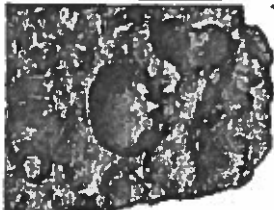


ROCK IDENTIFICATION

- Rocks have properties that can be observed, tested, and described.
- Composition, grain size and textural features, color, and the presence of fossils help with identification.
- Classification keys (5.1) can aid this process (the curriculum guide specifically mentions that students should be able to use a key to identify granite, gneiss, slate, limestone, shale, sandstone, and coal).



Only sedimentary rocks contain visible fossils.



Shell fossils indicate that area was once under water

ANCIENT EARTH - FOSSILS

- Scientific evidence indicates Earth is ancient – approximately 4.6 billion years old.
- The age of many rocks can be determined very reliably.
- Fossils provide information about life and conditions of the past.

EARTH'S LAYERS

- Scientific evidence indicates that Earth is composed of four concentric layers – crust, mantle, outer core, and inner core – each with its own distinct characteristics.
 - The outer two layers are composed primarily of rocky material.
 - The innermost layers are composed mostly of iron and nickel.
 - Pressure and temperature increase with depth beneath the surface.

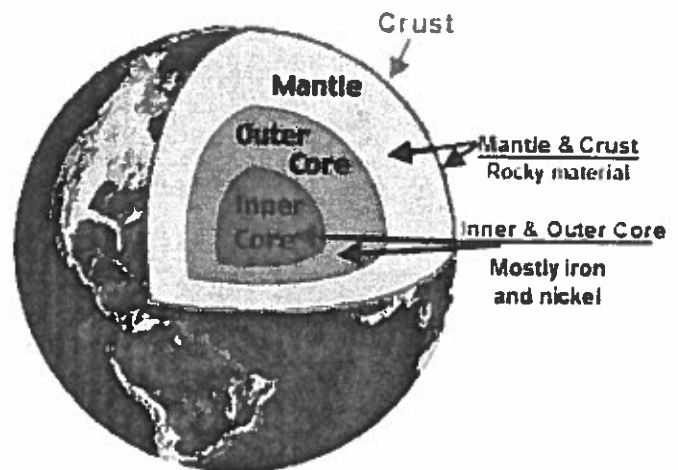
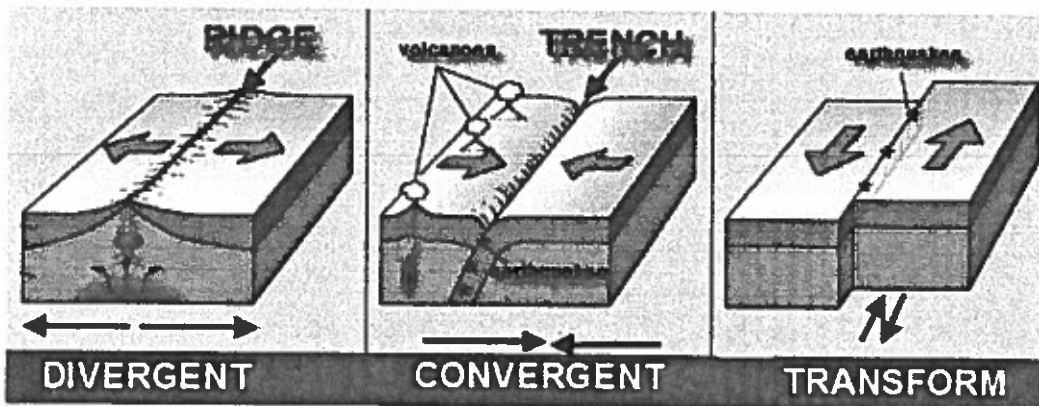
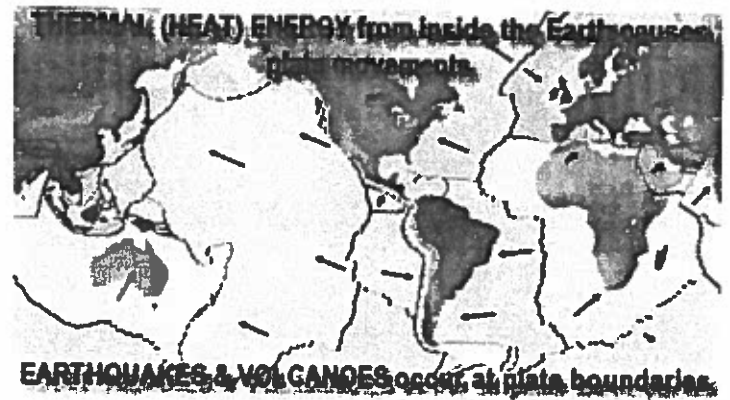
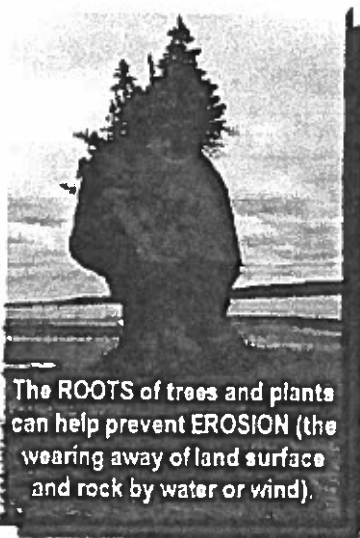


PLATE MOVEMENT

- Earth's thermal energy causes movement of material within Earth. Large continent-size blocks (plates) move slowly about Earth's surface, driven by that thermal energy.
- Most earthquakes and volcanoes are located at the boundaries of the plates (faults).
- Plates can
 - move together (convergent boundaries),
 - apart (divergent boundaries),
 - or slip past each other horizontally (transform boundaries, also called strike-slip or sliding boundaries).



- Geological features in the oceans (including trenches and mid-ocean ridges) and on the continents (mountain ranges, including the Appalachian Mountains) are caused by current and past plate movements.



WEATHERING & EROSION

- Rocks and other materials on Earth's surface are constantly being broken down both chemically and physically. The products of weathering include clay, sand, rock fragments, and soluble substances.
- Materials can be moved by water and wind (eroded) and deposited in new locations as sediment (deposition).

HUMAN IMPACT

- Humans have varying degrees of impact on Earth's surface through their everyday activities. With careful planning, the impact on the land can be controlled.