

Science - Rocks, Fossils and Soils

Key Knowledge: Rocks and Soil

Rocks are natural and are made up of minerals.

There are man-made substances that may behave or look like rock, these are referred to as **anthropic** rocks.

Rocks can be described by various characteristics including whether they are **permeable / impermeable**, **hard / soft**, their **durability**, their **density**.

Rocks change over time due to **erosion** or **weathering**.

Weathering is a part of the life cycle of rocks.

Some rocks let water through them (**permeable** rocks) while others do not (**impermeable** rocks)

There are three different types of rock:

Igneous—formed from molten rock either internally (intrusive) or externally (extrusive)

Metamorphic—Metamorphic rocks arise from the transformation of existing rock types, in a process called metamorphism, which means "change in form". The original rock is subjected to heat and pressure, causing profound physical or chemical change.

Sedimentary— forms under the sea as a result of weathering or erosion and involves sedimentation, compaction and cementation.

Soil is made up of air, minerals, water and organic matter.

The four processes of soil formation: **additions**, **losses**, **translocations**, **transformations**. All four processes are taking place at the same time all the time!

The **permeability** of soils affects which plants will grow and how well they grow in the particular soil.

Key Vocabulary:

Density— the state or condition of having parts very close together with little space between.

Durability—the ability to withstand wear, pressure, or damage.

Erosion— to destroy or wear something away gradually.

Geologists are scientists who study what the earth is made from.

Impermeable – not allowing a liquid to pass through

Mineral—a substance formed in the earth that is not of an animal or a plant

Permeable— allows a liquid to pass through

Rock— a solid mass made up of minerals.

Soil— the upper layer of earth in which plants, tree, etc. grow.

Transformation— a marked change in form, nature, or appearance.

Translocation— the movement of something from one place to another.

Weathering— changes because of the action of the sun, wind, rain, etc.

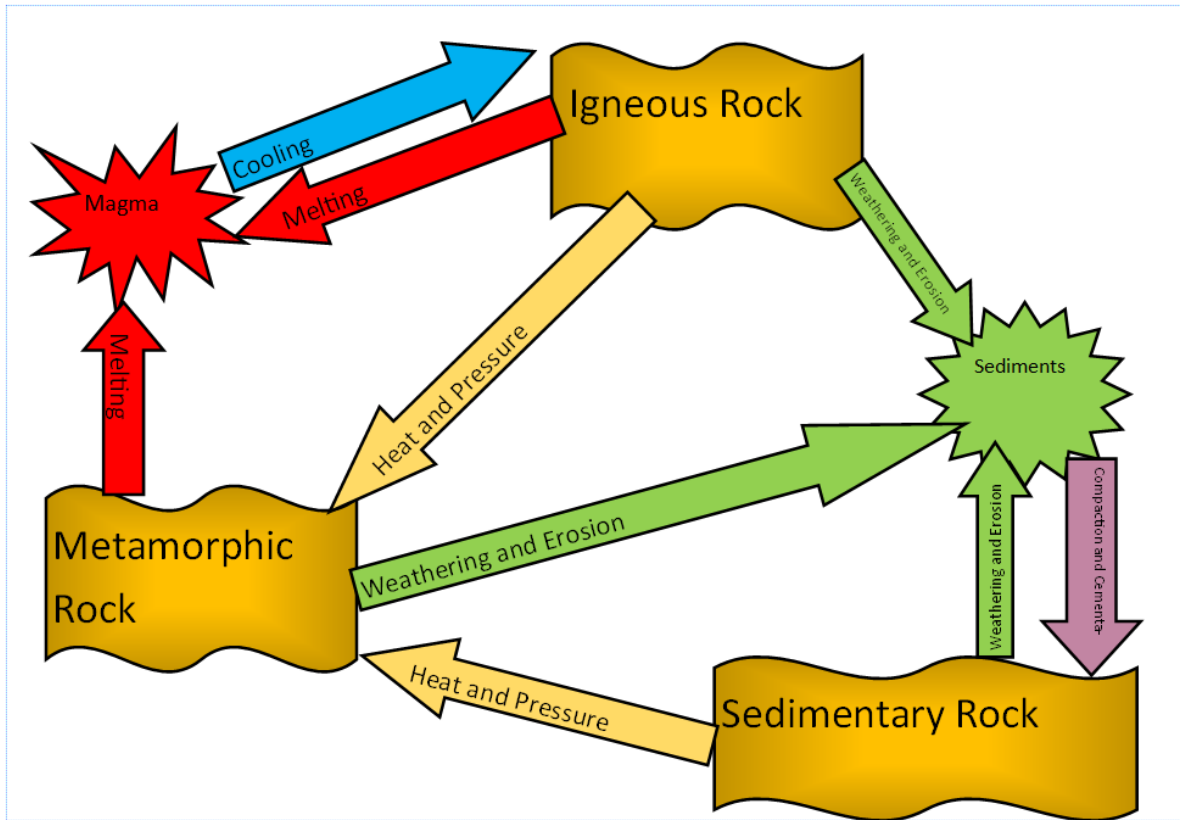
Layers of Soil

Humus – made up of dead leaves and animals

Top Soil – where plants grow their roots

Subsoil – contains a much lower amount of organic matter (dead leaves, etc.)

Bedrock – the main mass of rocks forming the Earth and present everywhere



The Rock Cycle

Key Vocabulary:

Palaeontology is the study of fossils.

Key Knowledge: Fossils

A fossil is the preserved remains or impressions of a living organism such as a plant, animal, or insect. Some fossils are very old. Studying fossils helps scientists to learn about the past history of life on Earth.

There are three types of fossils – body fossils, trace fossils and chemical fossils.

Chemical fossils contain carbon, which is proof that they must be formed from once living things

Body fossils are the remains of an animal or plant such as bones, shells or leaves.

There are three types of Body Fossil: Mould and Cast Fossils, Replacement Fossils and Whole Body Fossils.

Mould fossils form when all the parts (including the bones) have decayed and all that is left is the mould of the animal.

Cast fossils form from mould fossils as the mould fossil is filled up with sediment – so it is not made up of the original matter of the animal or plant.

Replacement fossils form when water dissolves the original hard matter of the bones and replaces them with mineral matter

Whole body fossils form when the original body has been preserved

Trace Fossils are fossils that record the activity of an animal, e.g. footprints or fossilised waste products.