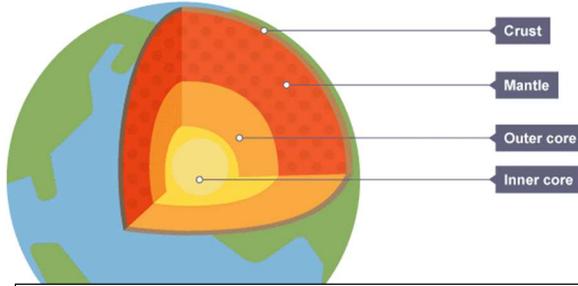


## Knowledge organiser – 7.1 Earth Structure



The Earth is almost a sphere. These are its main layers, starting with the outermost:

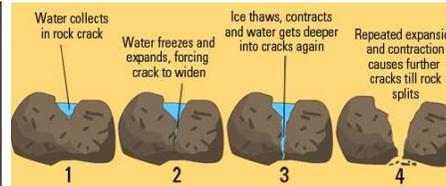
- crust (relatively thin and rocky); made of minerals such as oxygen, silicon, aluminium, iron, calcium and sodium.
- mantle (made of solid rock, but can flow very slowly)
- core (made from nickel and iron). The outer core is liquid and the inner core is solid.

**How do we know about the layers of the Earth?** Scientists study shockwaves from earthquakes. They also examine rocks on the surface and in oceans as well as volcanoes.

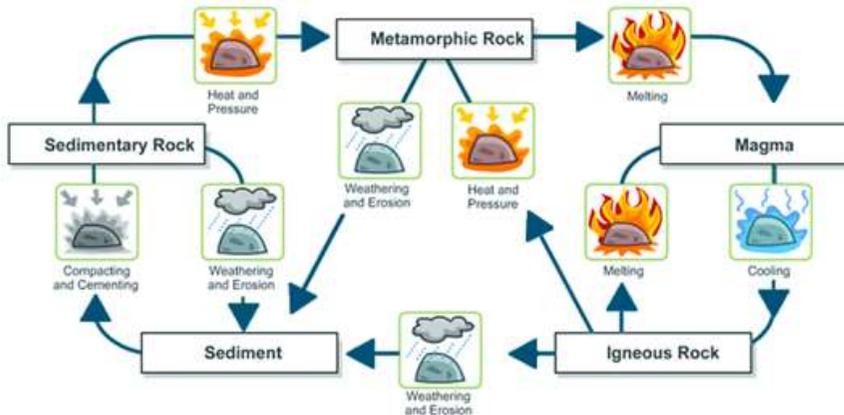
Type	Igneous	Sedimentary	Metamorphic
Properties	<ul style="list-style-type: none"> <li>• Made up of crystals</li> <li>• Not porous</li> <li>• Hard and durable</li> </ul>	<ul style="list-style-type: none"> <li>• Made up of separate grains</li> <li>• Porous</li> <li>• Most are soft</li> </ul>	<ul style="list-style-type: none"> <li>• Made up of crystals</li> <li>• Not porous</li> </ul>
Formation	Large crystals – magma cools slowly Small crystals – liquid rock cools quickly	Weathering (makes sediments) → erosion → deposition → compaction and cementation	High heat and / or pressure (particles are rearranged or new layers of crystals are formed)
Uses	Pavements and underneath railway tracks	Buildings	Kitchen worktops, roofing tiles

### Weathering:

1. Physical (temperature change; freeze-thaw).
2. Chemical (when rain falls on rocks; acids in the rain reacts with substances in the rock).
3. Biological (plants and animals break up rocks).



**The Rock Cycle:** There are many routes around the rock cycle.



Rocks change and their materials are recycled. The Earth's crust is always moving. When continents collide, huge forces from inside the Earth push rocks upwards, and mountains can form. This is called **uplift**. This gives us evidence for the rock cycle.

### CERAMICS

The uses depend on their properties.

- Bricks → strong, durable & attractive.
- Dishes → unreactive & can be decorated.
- Engine blades → can get very hot.

In ceramics, huge numbers of particles join together in one big structure. There are strong forces between particles.

### Properties of ceramics

Hard

Brittle

Solid at room temperature

Very high melting points

Electrical insulators

Strong when forces press on them

Easy to break when stretched

Do not react with water, acids or alkalis.

KEYWORD	DEFINITION
<b>Ceramic</b>	A compound that is hard, strong and has a high melting point.
<b>Core</b>	The innermost later of the Earth, which extends about halfway from the centre of the Earth to the surface.
<b>Crust</b>	The rocky outer layer of the Earth.
<b>Deposition</b>	The settling of sediments that have moved away from their original rock.
<b>Durable</b>	A property of a material meaning it is difficult to damage.
<b>Erosion</b>	The breaking of a rock into sediments and their movement away from the original rock.
<b>Igneous rock</b>	Formed when lava or magma cools and freezes. Their minerals are arranged in crystals. E.g. granite & basalt.
<b>Magma</b>	Liquid rock below the Earth's surface.
<b>Mantle</b>	The layer of the Earth that is below the crust. It is solid but can flow very slowly.
<b>Metamorphic rock</b>	Formed when existing rocks exposed to heat and/or pressure over a long time. E.g. marble, slate and schist.
<b>Minerals</b>	Chemicals that rocks are made from.
<b>Porous</b>	A porous material has small gaps that may contain substances in their liquid or gas states. Water can soak into a porous material.
<b>Rock cycle</b>	Sequence of processes where rocks change from one type to another, over millions of years.
<b>Sediment</b>	Pieces of rock that have broken away from their original rock.
<b>Sedimentary rock</b>	Formed from layers of sediment, which can contain fossils. E.g. limestone, chalk and sandstone.
<b>Strata</b>	Layers of sedimentary rock.
<b>Transport</b>	Movement of sediments far from their original rock.
<b>Uplift</b>	Uplift happens when huge forces from inside the Earth push rocks upwards.
<b>Weathering</b>	The breaking down of rock into smaller pieces by physical, chemical or biological processes.