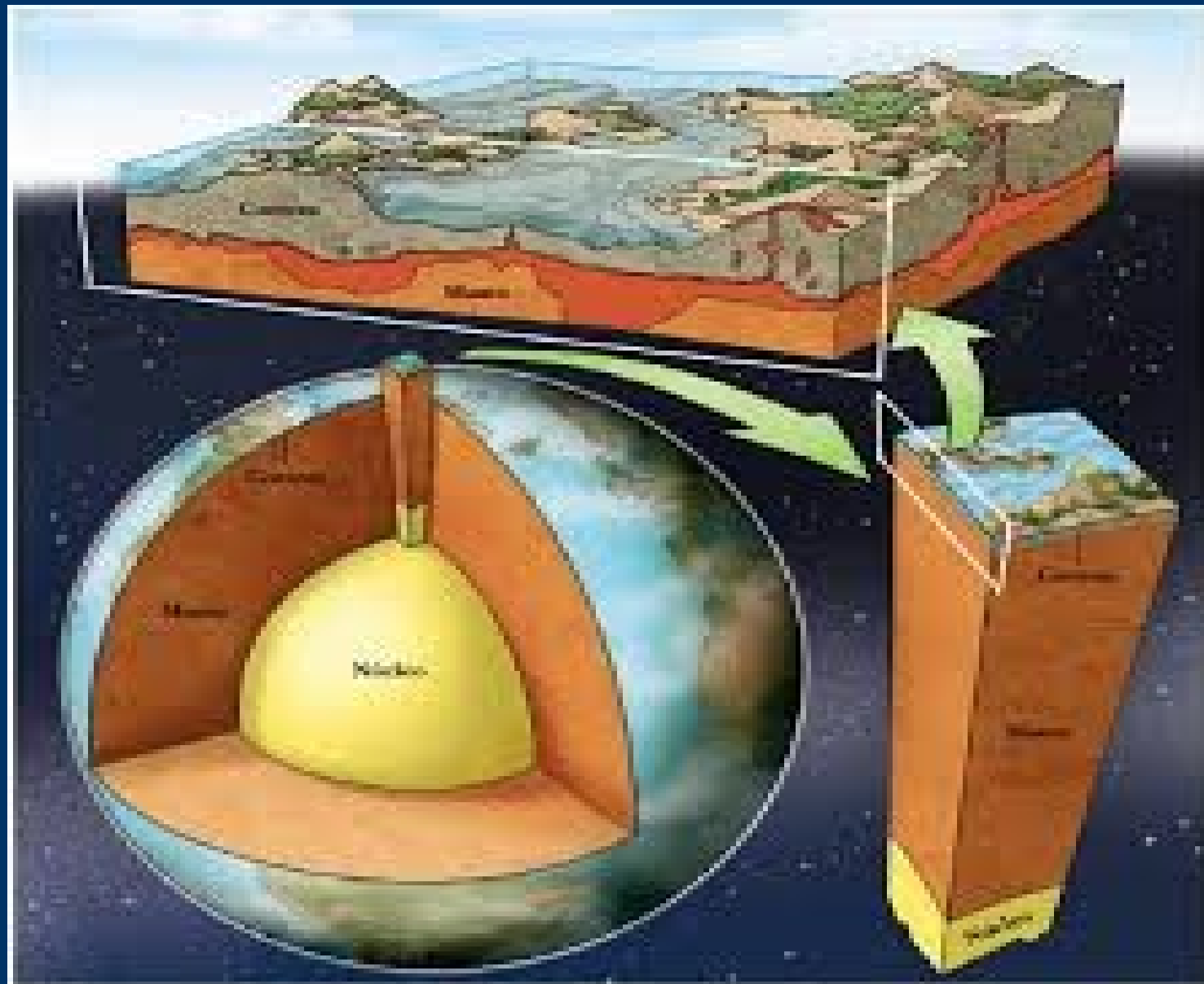


"THE SOLID PART OF THE EARTH"



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1. MINERALS.

A mineral is a naturally occurring solid that has definite chemical composition and a crystalline structure.

They have some physical properties:

- **Hardness**: Resistance to scratching or abrasion. It is measured by the Mohs Scale.
 - **Lustre**: How light is reflected from surface of a mineral. Lustre can be **metallic** or **non-metallic**. If the mineral doesn't have lustre we say it is **dull**.
 - **Colour**: Sometimes let us to identify easily a mineral.
 - **Streak**: The colour of a mineral in powder form. It is constant in each mineral.
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1. MINERALS.

- **Transparency:** The amount of light able to pass through a mineral. A mineral can be **transparent**, **traslucid** and **opaque**.
- **Cleavage:** The ability of a mineral to break along planes of weakness producing regular fragments.
- **Magnetism:** Some mineral attract magnets.

Many mineral give us useful materials. Minerals that contains enough of a metal or compound to be extracted in a profitable way are called **ores** and are mined from a **deposit**.

From some minerals we can obtain useful substances, such as, paint or pigments.

Precious stones and **Noble metals** are valuable because of their colour, rarity and beauty.

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2. ROCKS

Rocks are a mixture between different minerals. Some rocks, such as, coal or petrol, aren't made of minerals, they are remnants of living things.

There are three types of rocks according to their origin:

- **Sedimentary rocks:** Are formed when **sediments** at the bottom of **sedimentary basins** are compacted by the weight above them. Ex: Sandstones, conglomerate, coal and petroleum.
- **Igneous rocks:** Are formed when **magma** cools down.
 - **Plutonic:** If the magma cools down slowly inside the Earth.
 - **Volcanic:** If the magma cools down quickly on the Earth's surface.

Ex.: Granite, basalt, obsidian, pumice stone, etc.

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2. ROCKS

- **Metamorphic rocks:** Are formed when rocks are subjects of high pressure or/and temperatures. **The structure of the rocks changes but the rocks don't melt.**

THE IMPORTANCE OF ROCKS

- **Conglomerate** produces gravel, wich is use to make concrete.
 - **Sandstones** produces sand, wich is used to make glass.
 - **Clay** is baked to make bricks and pottery.
 - **Limestone** is used as a building material.
 - **Coal** and **petroleum** are our main source of energy.
 - **Granite** is used in construction and for ornamental stonework.
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3. MINERAL AND ROCK MINING

The mining of an area depends on:

- The potential financial benefits.
- What type of rock is needed.
- How easy it is to reach the rocks and mine them.

The proportion of metal found in a deposit is known as the **concentration**.

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3. MINERAL AND ROCK MINING

- MINERAL MINING

There are two basic methods of mining:

- **Underground mining:** It takes place in the subsoil, and it is used to extract mineral from below the surface of the ground. The mine is composed of tunnels which lead to the seams of minerals.



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3. MINERAL AND ROCK MINING

- MINERAL MINING

- **Open cast mining**: It takes place in an open pit. It is used to extract minerals that are near the surface. Enormous holes are dug in the surface of the land.



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3. MINERAL AND ROCK MINING

- MINING FOR ROCKS

Rocks are usually mined in open cast mines, quarries. There are other methods of extracting rocks:

- **Gravel pits:** It produces gravel, which is usually found near river-beds.
 - **Oil drilling:** It is used to extract oil. It can be in land or on floating plantforms in the sea.
 - **Drilling:** Water is injected to dissolve soluble rocks and pump it to the surface.
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4. THE EARTH'S INTERNAL STRUCTURE

Earthquake analysis has allow us to establish three main parts inside the Earth, **crust**, **mantle** and **core**. The limit between the crust and the mantle is the **Mohorovicic discontinuity**, and the limit between the mantle and the core is the **Gutenberg discontinuity**.

- **The CRUST** is a thin layer of rocks that covers the Earth's surface above the mantle. There are two types of crust:
 - **The continental crust**: It is found at sea-level or above, and its thickness varies between 10 kms and more than 70 kms below the great mountain ranges.
 - **The oceanic crust**: It is the rocky layer beneath the oceans. It is denser than the continental crust, and its thickness varies between 5 and 8 kms.

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4. THE EARTH'S INTERNAL STRUCTURE

- THE MANTLE AND THE CORE

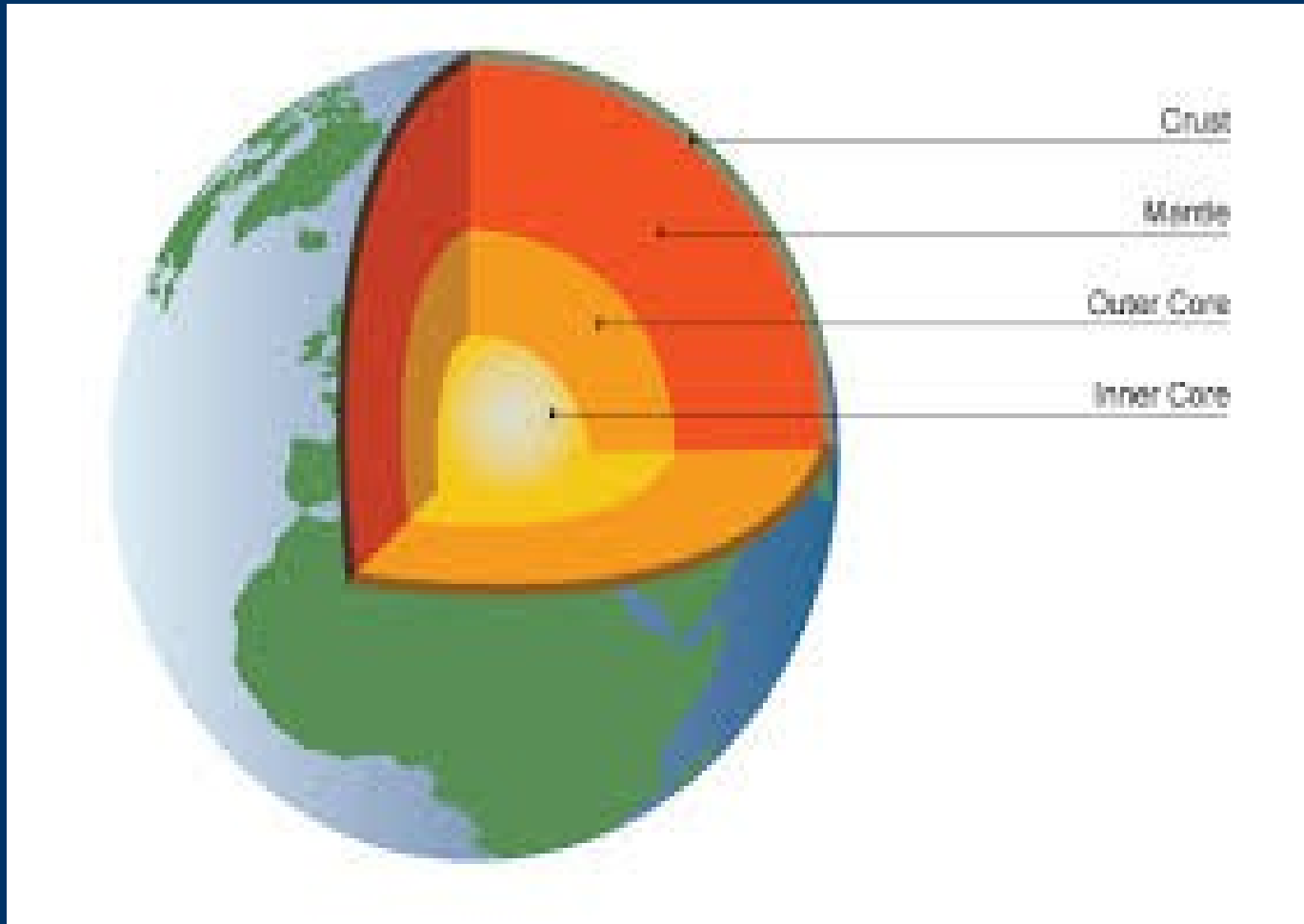
The mantle and the core each contain two areas of very different density:

1. The upper and the lower mantles.
2. The outer and the inner cores.

The most abundant element in the Earth's core is probably **iron**. For this reason the Earth behaves as an enormous magnet, capable of moving a compass. Other substances are also believed to be inside the Earth, such as **nickel**.

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4. THE EARTH'S INTERNAL STRUCTURE



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4. THE EARTH'S INTERNAL STRUCTURE

- **THE LITOSPHERE:**

It is a part of the Earth composed by the crust and some of the upper mantle.

The lithosphere is made off rocks and is divided into large pieces, **tectonic plates**.

Below the lithosphere is a layer of semi-fluid rock called the **asthenosphere**.

