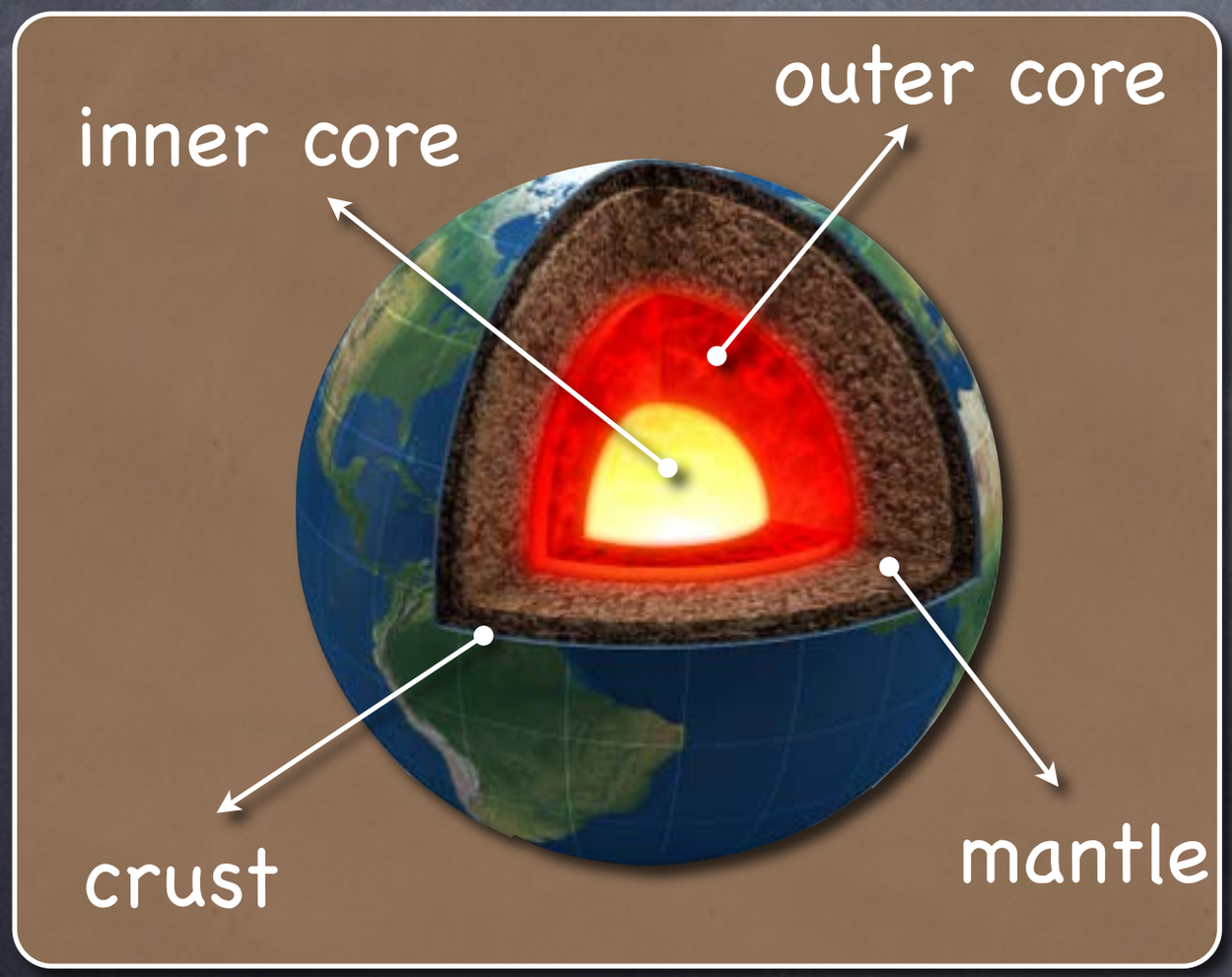
Rocks, Fossils and Soils

Learning Objective:

To explore what fossils are and how they are formed.

Can you remember how rocks are formed?

Rock is beneath every surface on Earth because rock makes up the layers of the Earth underneath the ground. Sometimes the rock is on the surface so you can easily see it. Other times it is covered with soil so it is less obvious.



This diagram shows the layers of the Earth. The inner core is a ball of iron, the outer core is a shell of liquid iron, the mantle is rock that is so hot it is a liquid and the crust is made up of rock and soil.

Scientists split rock into three main groups: igneous rock, sedimentary rock and metamorphic rock. Over millions of years, each type of rock can change into one of the others in a process known as the rock cycle.

Let's find out about these different types of rock...

Igneous Rock

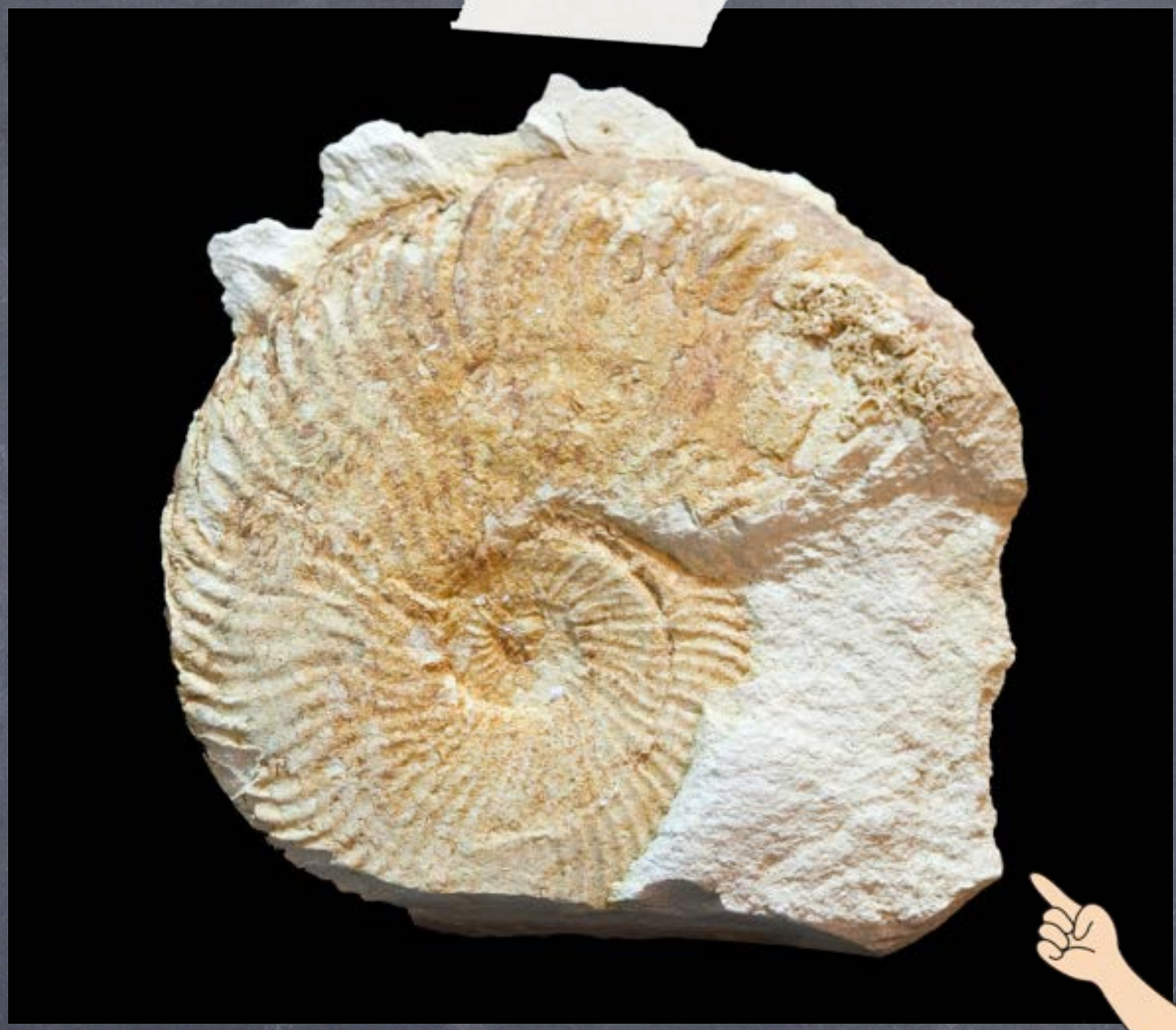
Igneous rock is formed when the lava (the hot, molten rock from inside the Earth's mantle) from a volcano cools down. It can also happen when the magma underground cools. Igneous rocks have large grains and are very hard.

Sedimentary Rock

Sedimentary rock is formed when sand, mud and the remains of dead plants and animals settle on the sea floor. Over time, they form layers and are compressed by the weight of what is on top of them. This joins the particles together to form rock. Sedimentary rocks are often less strong than other types of rock.

Metamorphic Rock

Metamorphic rocks are formed when igneous or sedimentary rocks are subjected to intense heat and pressure. This causes the rock to recrystallise in new forms. Metamorphic rocks, such as marble or slate, are usually the hardest types of rock and often form in mountainous areas.



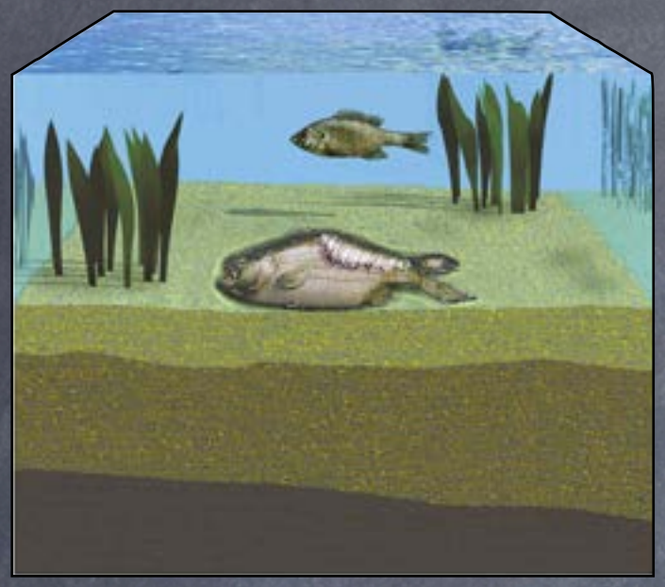
What is this?

This is a fossil. Fossils are the petrified remains of plants and animals from more than 10,000 years ago. 'Petrified' means that the plants or animals have turned into a stony substance.

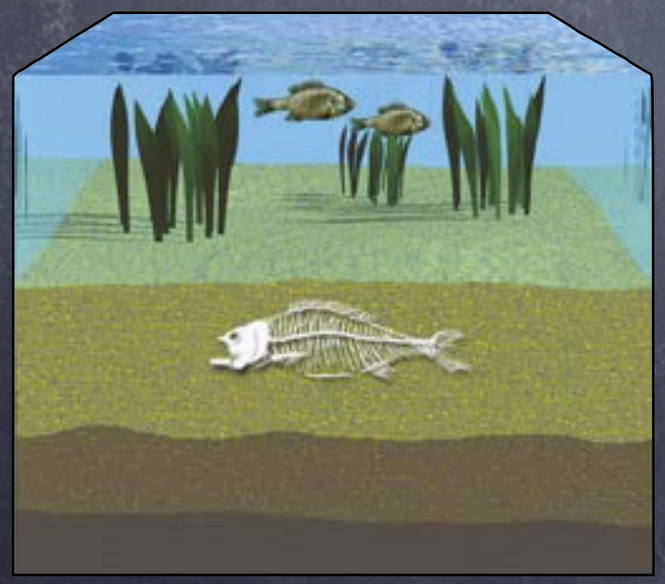
Fossils can show the skeletons of animals or the imprints of plants, animals or footprints.

How do you think fossils are formed?

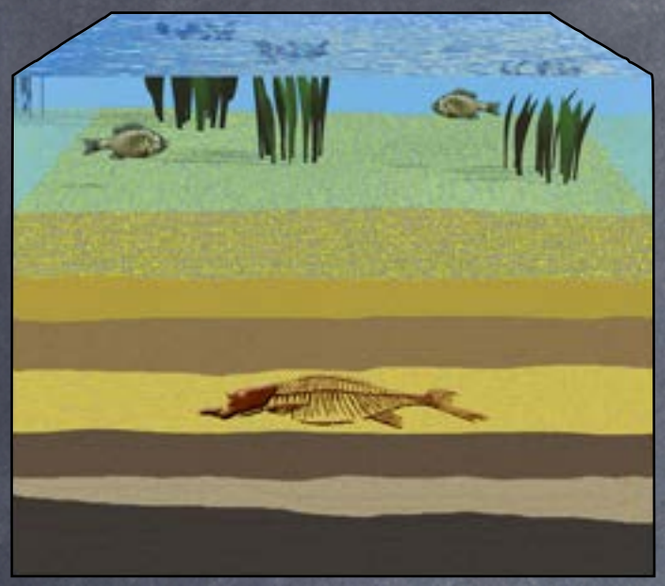
How a fossil is formed



The fish dies and sinks to the sea floor. Other animals eat the flesh, leaving only the skeleton.



A layer of mud, silt and sand cover the skeleton. This helps to preserve the skeleton. It doesn't decay as quickly because it is not getting as much oxygen.



Over thousands of years, the mud is compressed into sedimentary rock. The skeleton dissolves, leaving a mould. This mould is filled by minerals which form a new stony substance.

Millions of years later, the fossil is brought to the surface by the movement of the Earth's crust. Now it can be discovered!

What do you think we can find out from fossils like these?

Palaeontologists are scientists who study fossils. Studying the remains of animals and plants can help them to find out what the world was like millions of years ago. From fossils, palaeontologists can explore how animals and plants evolved over time, as well as how organisms interacted with each other.

That was a lot of information!
Who's ready to go and do some work on their own?!

Plenary:

What is this picture showing?

This is the Petrified Forest National Park in Arizona, USA. There are lots of fossils of logs, animals and plants here from organisms that lived more than 200 million years ago!

This picture is showing the petrified remains of tree trunks. Tree fossils...how amazing is that?!