

# Key facts

## Rocks

- Rocks are naturally occurring materials.
- There are different types of rock which have different properties.
- Rocks can be different shapes and sizes.
- If you dig down anywhere on Earth you will find rock.
- Rocks can be hard, soft, permeable or impermeable, depending on what type of rock it is.

## Soils

Soil is one of the three major natural resources, alongside air and water. .

- Soils are made up of pieces of ground down rock which may be mixed with plant and animals matter.
- The type of rock, size of rock pieces and the amount of organic matter affect the property of the soil.
- Soil is the uppermost layer of the Earth. It is a mixture of different things:
  - minerals (the minerals in soil come from finely broken-down rock);
  - air;
  - water;
  - organic matter (including living and dead plants and animals).

## Fossils

- Some rocks contain fossils.

### Fossils were formed millions of years ago.

1 Plants and animals died and sank to the seabed.

Animal fossil

2 The soft parts decayed away leaving the hard parts.

Plant fossil

3 The hard parts were covered and squashed by many layers of sand and other materials.





4 The animal/plant matter dissolves and is replaced by minerals, leaving a replica of the original bone called a fossil.



## Year 3 Science Autumn 2

### Rocks, Fossils and Soils




#### Science strand: Biology

The property of soils is affected by the: type of rock size of rock pieces amount of organic matter in it.	
<b>Peat</b> 	- water-logged - contains partially decomposed plant material - soft and easily compressed
<b>Sandy soil</b> 	- light and dry lots of air gaps so water drains through quickly
<b>Chalky soil</b> 	- stony and water drains through quickly - found in areas with lots of chalk
<b>Clay soil</b> 	- very sticky when wet - a heavy soil - water does not drain through it quickly

## Vocabulary

Word	Definition
Chalk	A softer, white rock and is a type of limestone.
Clay Soil	Clay soil feels lumpy and sticky when very wet. It is rock-hard when dry. It does not let through water easily and has few air spaces. It is very hard to dig.
Fossils	Fossils are formed in a number of different ways, but most are formed when a plant or animal dies in a watery environment and is buried in mud and silt.
Granite	Is harder and tough, usually grey to pink in colour and often used for buildings. Granites are made up of crystals, which can often be seen clearly on the surface.
Limestone	A grey/white rock that was formed from the bones of tiny sea creatures that dropped down to the bottom of the sea when they died. It is used as a building stone, and to make concrete.
Marble	Is made of limestone that has experienced extreme heat and changed to form a hard rock that is used in buildings and to create sculptures.
Sandstone	Is a clastic sedimentary rock composed mainly of sand-sized mineral particles or rock fragments
Sandy Soil	Sandy soil feels gritty to the touch and lets water through easily. It is easy to dig and dries out rapidly.
Slate	Is fine-grained and when expertly cut it will form smooth flat sheets of stone, which have long been used for roofing, floor tiles and other purposes.

## Types of rock

<b>sandstone</b> 	<b>limestone</b> 
<b>chalk</b> 	Chalk is used for drawing because it is crumbly and soft.

<b>quartzite</b> 	<b>slate</b> 
<b>marble</b> 	Marble is good for gravestones because it does not rub away.

<b>basalt</b> 	<b>pumice</b> 
<b>granite</b> 	Granite is good for worktops because it is hard and does not absorb water.

## Describing rocks

hard/soft

texture

grains



crystals

layers

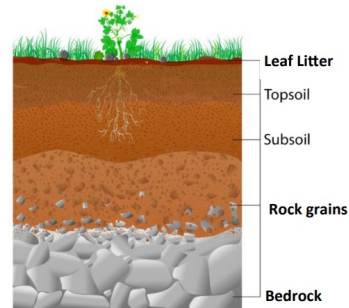
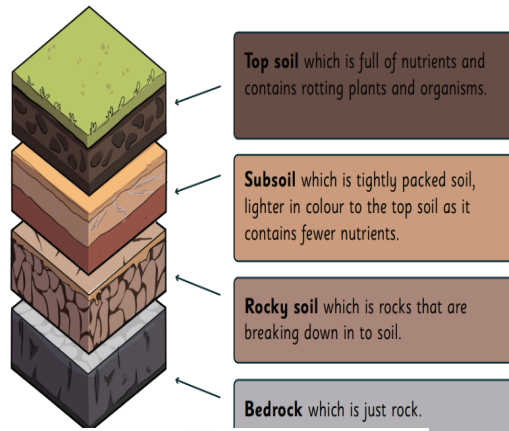
absorb water

### Knowledge and Understanding:

Children will:

- identify and name rocks,
- identify ways in which rocks are used in the local environment and suggest why the properties of certain rocks make them suitable for particular purposes.
- consider how rocks are affected by weathering over time and work scientifically to carry out tests to establish the hardness and permeability of different kinds of rocks.
- explore a variety of soils first hand, making the link between soils of different types and the rocks from which they are partly made.
- test a variety of soils, including local soils, to make comparisons and draw conclusions based on their observations.
- discover what a fossil is and how they came to be formed
- from animal and plant remains.
- learn about the stages of the fossilisation process.

# Soil layers



**Mary Anning (1799 –1847)** was an English fossil collector, dealer, and palaeontologist who became known around the world for important finds she made in Jurassic marine fossil beds in the cliffs along the English Channel at Lyme Regis in the county of Dorset in Southwest England.

### Key Questions

- What different types of rocks are there?
- How can we sort rocks?
- How can we test rocks?
- How can we conduct a local rock survey?
- What are fossils?
- How are fossils formed?
- What is soil?
- Why is soil important?
- How can we plan a comparative test?
- How can we conduct a comparative test?
- How can we evaluate our investigation?
- Who was Mary Anning?

### Key skills and concepts:

In this unit, I will use these science enquiry skills

#### Comparative / fair testing

Changing one variable to see its effect on another, whilst keeping all others the same.

#### Research

Using secondary sources of information to answer scientific questions.

#### Observation over time

Observing changes that occur over a period of time ranging from minutes to months.

#### Pattern-seeking

Identifying patterns and looking for relationships in enquiries where variables are difficult to control.

#### Identifying, grouping and classifying

Making observations to name, sort and organise items.



Did you know that granite is good for worktops because it is hard and does not absorb water?

Did you know that chalk is used for drawing because it is soft and crumbly?

### Under our feet

