

The background is divided into three horizontal layers. The top layer is dark brown and contains several dark brown, branching tree roots. The middle layer is a lighter tan color and contains the title text. The bottom layer is a pale yellow color and contains several grey, irregularly shaped rocks. The title text is in a bold, orange, rounded font with a black outline and a drop shadow.

Soil Formation

Aim

- I can explain how soil is formed.

Success Criteria

- I can state that soil is composed of different things.
- I can describe the 4 processes of soil formation.

Are there different types of soil?



Sandy soil is pale and dry with lots of small air gaps.

Clay soil is a wet, sticky soil with very few air gaps.



Peat soil is dark and is made from very old decayed plants.

Silty soil is smooth and soapy to the touch.



Chalky soil is stony and drains easily.

Loamy soil is the perfect soil, which drains well and is full of nutrients.

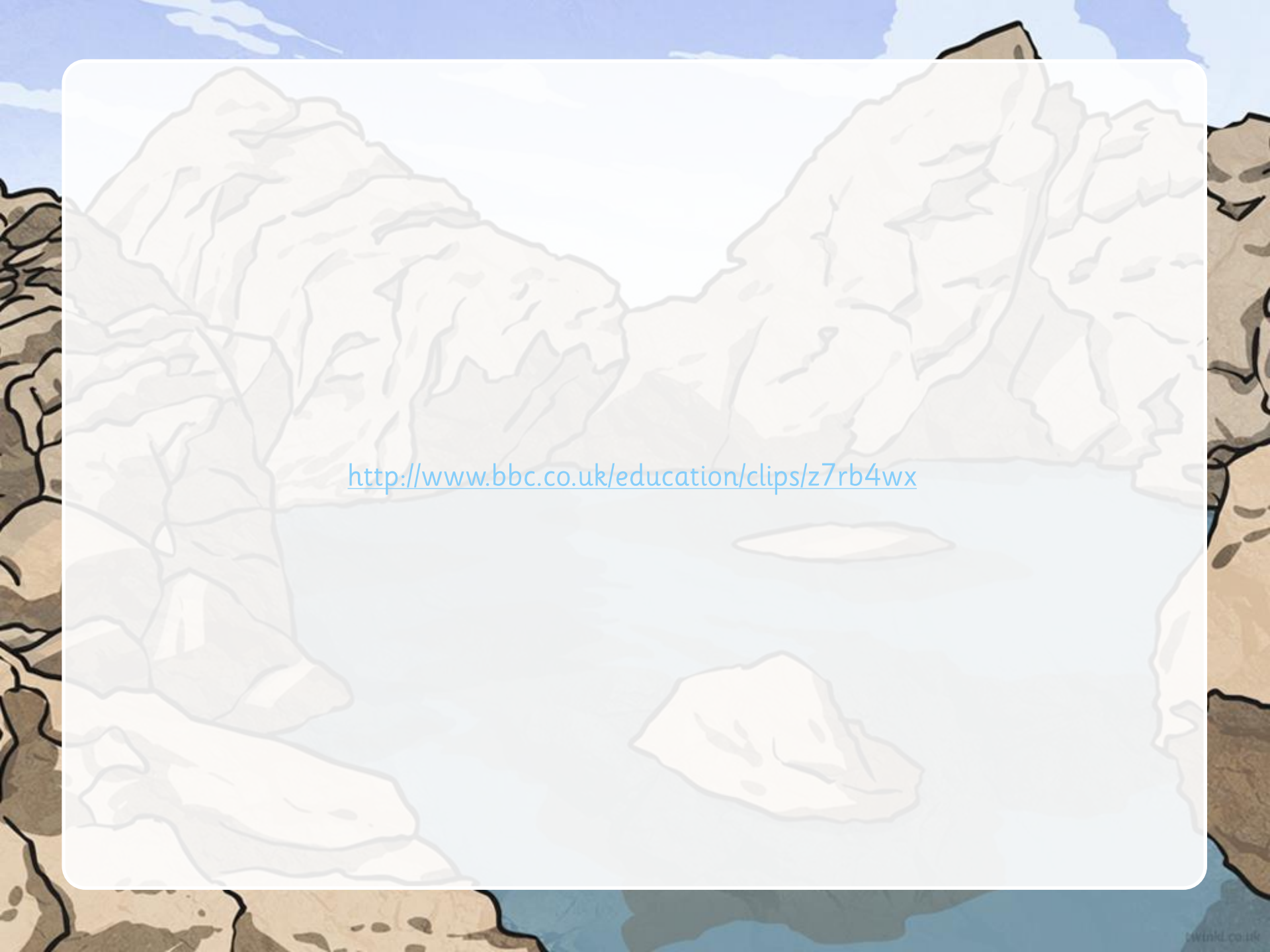


Did You Know?

Peat is different from other soils because it does not contain any rock particles.

Did You Know?

Different plants grow better in different types of soil.

The background is a stylized illustration of a rocky coastline. On the left and right sides, there are jagged, brown and tan rock formations. In the center, a body of light blue water stretches across the frame. A small, flat, light-colored island is visible in the middle of the water. The sky above the water is a pale, hazy blue. The entire scene is framed by a white border with rounded corners.

<http://www.bbc.co.uk/education/clips/z7rb4wx>

Soil



What is
soil?

What is soil
made from?



What Is Soil Made Of?

Soil is the uppermost layer of the Earth. It is a mixture of different things.

Air

Soil contains gases such as carbon dioxide, oxygen, nitrogen, methane and radon.

Water

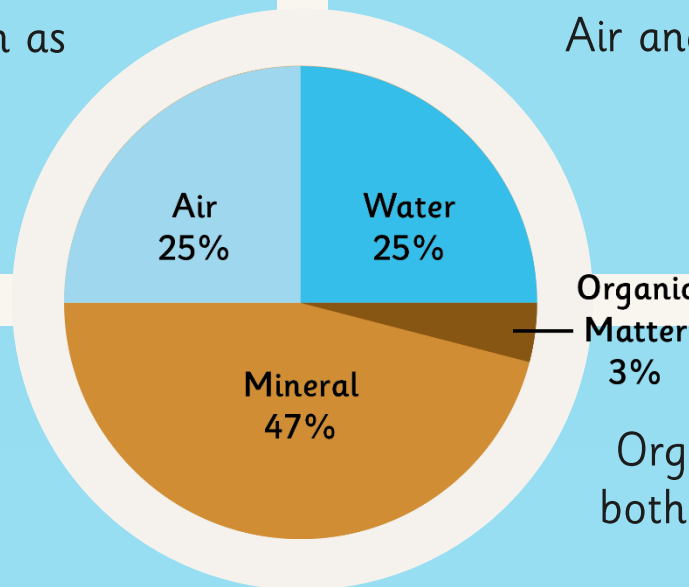
Air and water fill the gaps between particles of soil.

Mineral

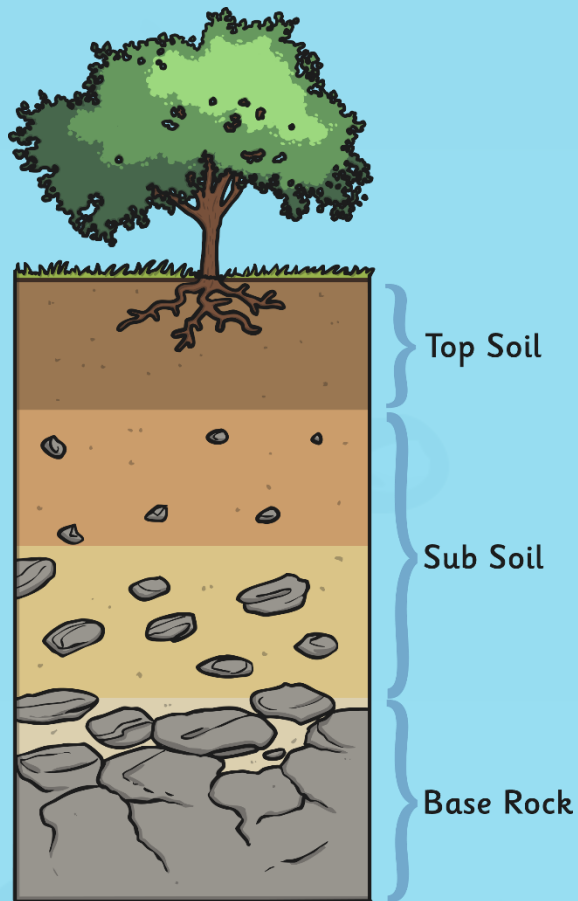
The minerals in soil come from finely broken down rock.

Organic Matter

Organic matter includes both living and decaying animals and plants.



Layers of Soil



Soil Layers

Soil is made up of distinct horizontal layers. If you could take an elevator ride through the earth's surface you would pass several distinct layers.

What are the layers of soil?

The **humus** is the topmost layer of soil. It contains quite a bit of living material, plants, decaying leaves, needles, moss, and more. This layer is thin and very dark in color.

The **topsoil** is the next layer down. It is made mostly of minerals, and most plant roots live here. This layer is also dark in color due to the amount of decaying plant and animal matter.

The **subsoil layer** is next. It is made of sand, silt and clay that have not been broken down all the way, so it usually has less organic material in it. It is also lighter in color.

The **parent material** is the next layer down. It is mostly rock that has been slightly weathered. Not many things live down here, except for the biggest tree roots.

The **bedrock** is the lowest layer of soil. It is a solid rock layer.



Soil Formation

There are 4 main processes involved in soil formation:

Additions



Losses



Translocations



Transformations



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Soil Formation

Additions

Rainfall adds water.

Dust adds minerals.

Animal waste adds organic matter and nutrients.

Decaying plants and animals add organic matter.

Humans add fertiliser. Fertilisers contain minerals and nutrients. Natural fertilisers are made from animal waste and organic matter. Man-made fertilisers are made from chemicals.

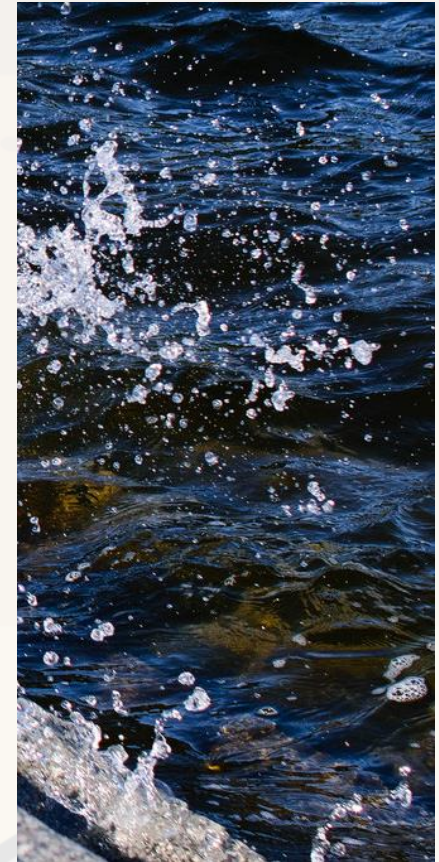


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Soil Formation Losses

Water evaporates (turns into gas when hot) into the air.

Soil particles can wash away in storms.

Organic matter can turn into the gas carbon dioxide.

Nutrients and Minerals are taken up by plants and can drain into groundwater.



Photo courtesy of Walter Baxter (@geography.org.uk) - granted under creative commons licence – attribution

Soil Formation

Translocations

Translocations are movements within the soil.

Gravity pulls water down from top to bottom.

Evaporating water draws the minerals up from the bottom to the top.

Animals living in the soil move the soil around in every direction.

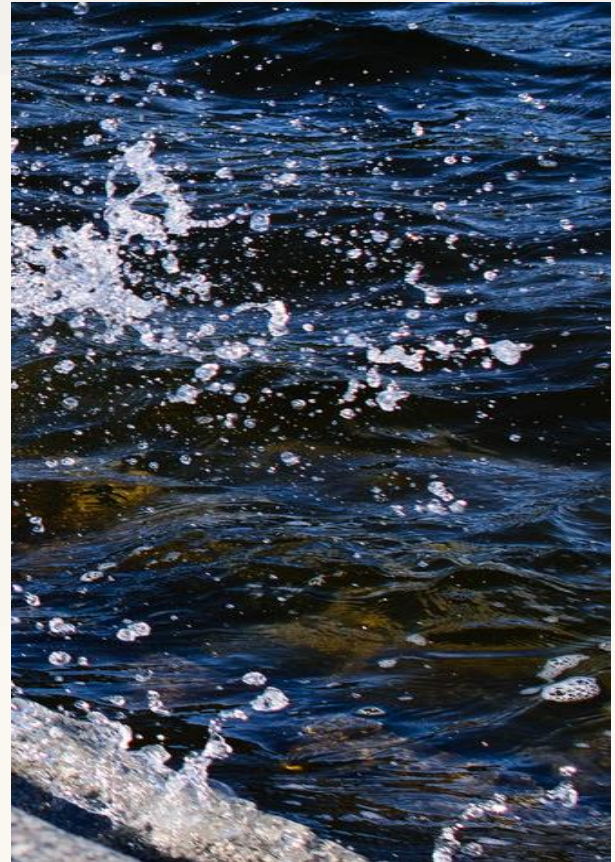


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Soil Formation Transformations

Transformations occur when something changes into something else.

Humus is what is left when dead leaves decompose.

Weathering causes hard rock to erode and turn into smaller and smaller pieces of rock.

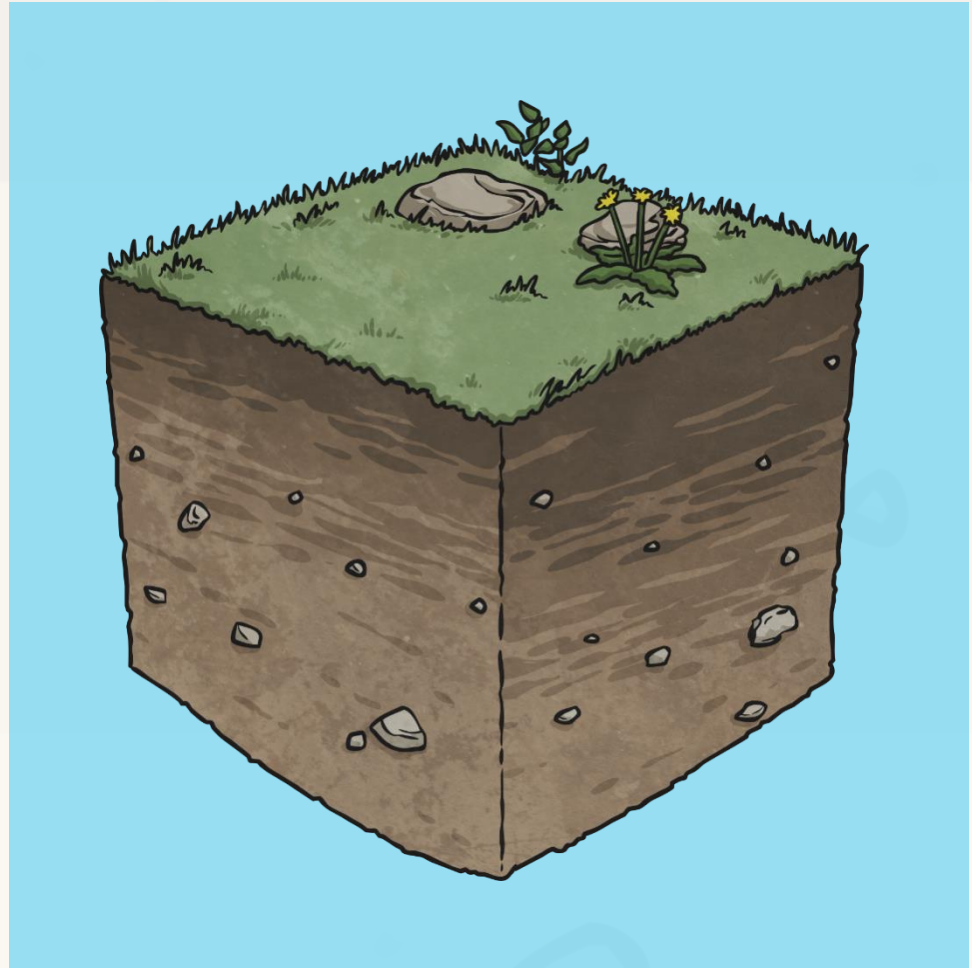
Oxygen **reacts** with the minerals such as iron which can make the soil look a reddish, 'rusty' colour.



Photo courtesy of Kenneth Allen (@commons.wikimedia.org) - granted under creative commons licence – attribution

Soil Formation

All four processes are taking place at the same time all the time!



Compost

Compost is organic matter that has been decomposed so that it can be recycled as natural fertiliser.

Many people choose to have a compost bin at home as they see it as more environmentally friendly to recycle waste food rather than throw it away.

It also means they can create their own fertiliser for soil in their garden or for plants, rather than buying it. You will now have a go at creating your own mini compost bin complete with worms!



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