

Soil!

A green-handled shovel is shown digging into a mound of dark, rich soil. The shovel's head is partially buried in the dirt, and its handle extends upwards towards the top right of the frame. The background is a green grid pattern.

Let's Dig In

Soil!



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This book was developed in collaboration with Region 4 Education Service Center, Houston, Texas.



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For the teacher

Students may have varied experiences and knowledge of soil, its components, and its uses. They may think that dirt and soil are the same. In this book, they will learn that dirt is loose soil found in places that soil does not belong, like the dirt you sweep off the floor or shake off your shoe. Soil is found almost everywhere and is an important natural resource of our world.

Different types of soil contain different components. The amount of each component in the soil determines its color, its capacity to retain water, its texture, and the way(s) it is used. These components include air, water, decayed materials (plant and animal remains), and tiny pieces of rocks. Depending on the size of the particles, we call these rock pieces sand, silt, or clay. Students will discover they cannot easily see the particle size of clay and silt, but they can see the sand particles and some pieces of organic material in the decayed materials.

Did you know? Dirt is not soil.



Soil is found in nature and is an important natural resource.

Dirt is loose soil found in places that soil does not belong, like on your clothes or shoes after you have played or worked in the soil.



Soil is important and useful.

We eat and make our clothing from plants, which grow in soil.





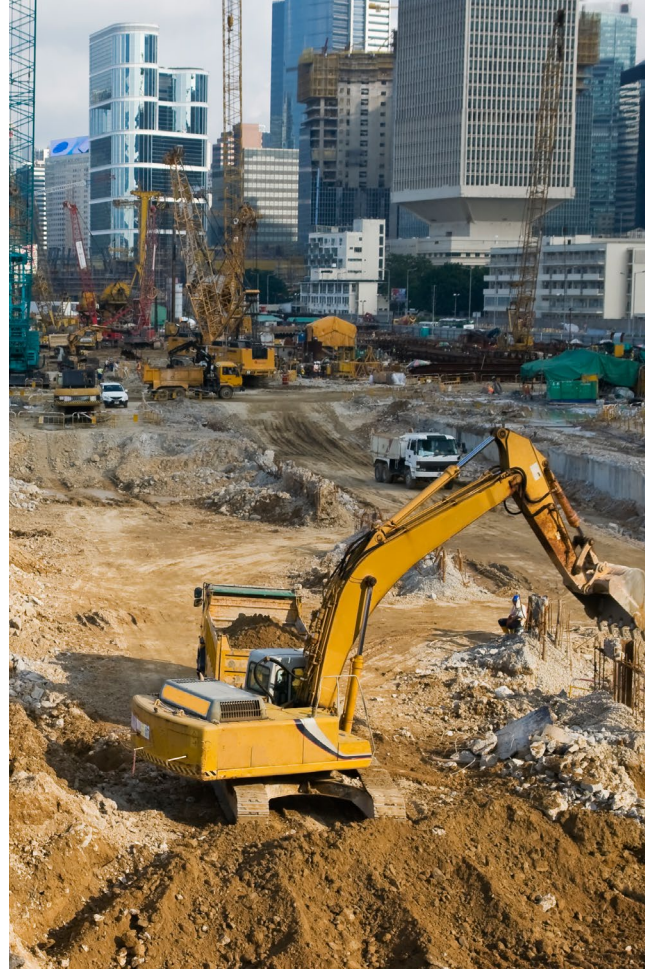
We build our homes and buildings using plants and trees that grow in soil. We mix different types of soil together to create other building materials like brick and cement.

Soil is found almost everywhere.



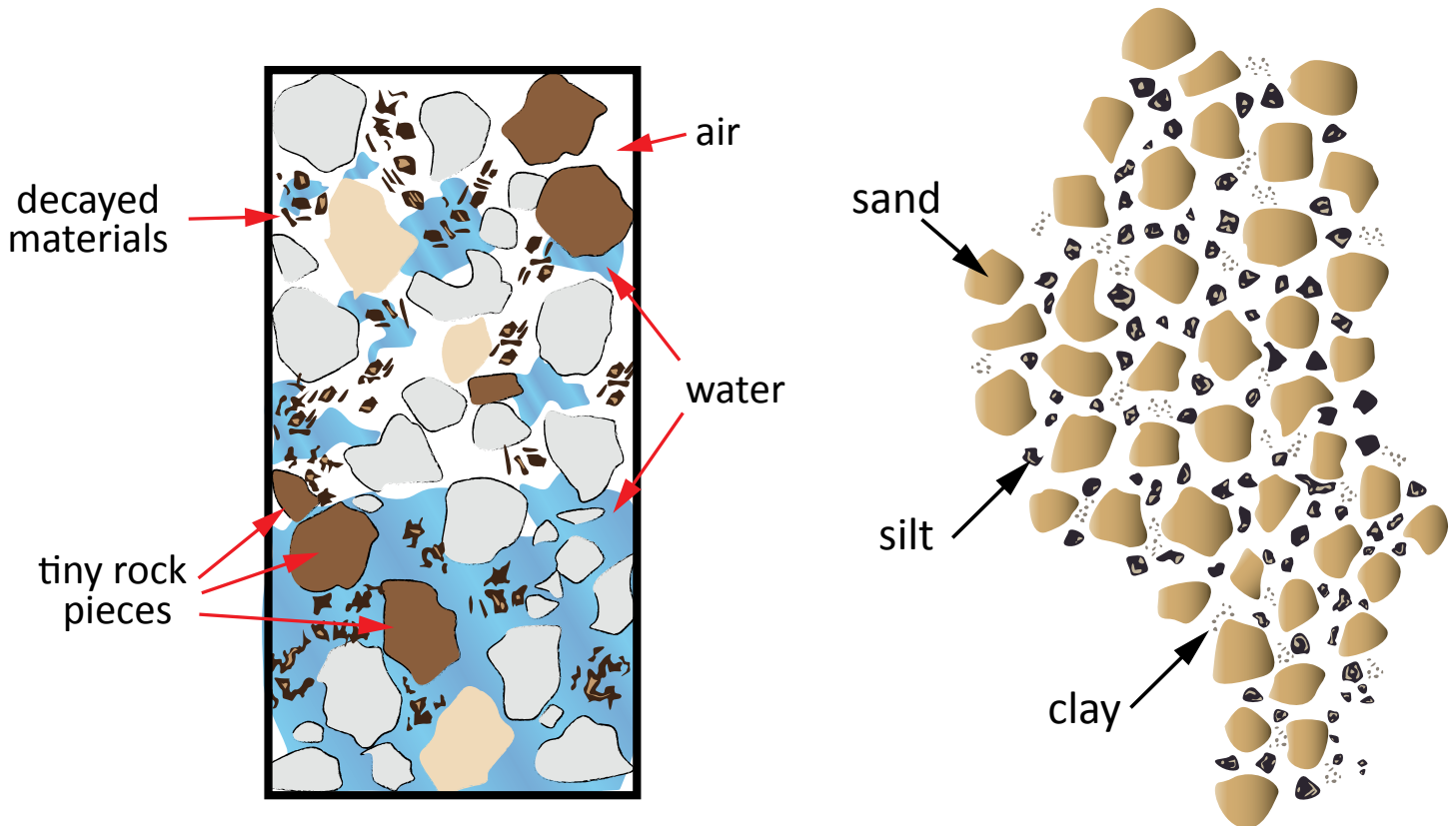
You might find soil in a yard, in a garden, and on a beach.

You might find soil along the road and in the city.



Soil has several components, or parts.

Soil is made of air, water, decayed plant and animal remains, and rocks.



Decayed materials are a component of soil.

Decayed materials are usually found in the top level of soil and are usually black or brown.

This mix of remains of plants and animals adds helpful nutrients to soil.





Because soil is a mix of different things, it has different-size particles and will feel different depending on what is in the soil.

Rock particles come in different sizes.



Based on their size, we call these rock particles sand, silt, or clay. Soil is made of different amounts of sand, silt, clay, and decayed materials. Different amounts of these parts can make the soil look and feel different.

Sand is an example of rock material.



Sand may be tan, pink, white, or even black. The rock or shell it comes from determines its color.

You can see and feel particles of sand. Sand feels gritty because it has large particles.

Sand particles do not stick together, allowing water to flow through them. Plants like cacti, which do not need a lot of water, grow well in sandy soils.



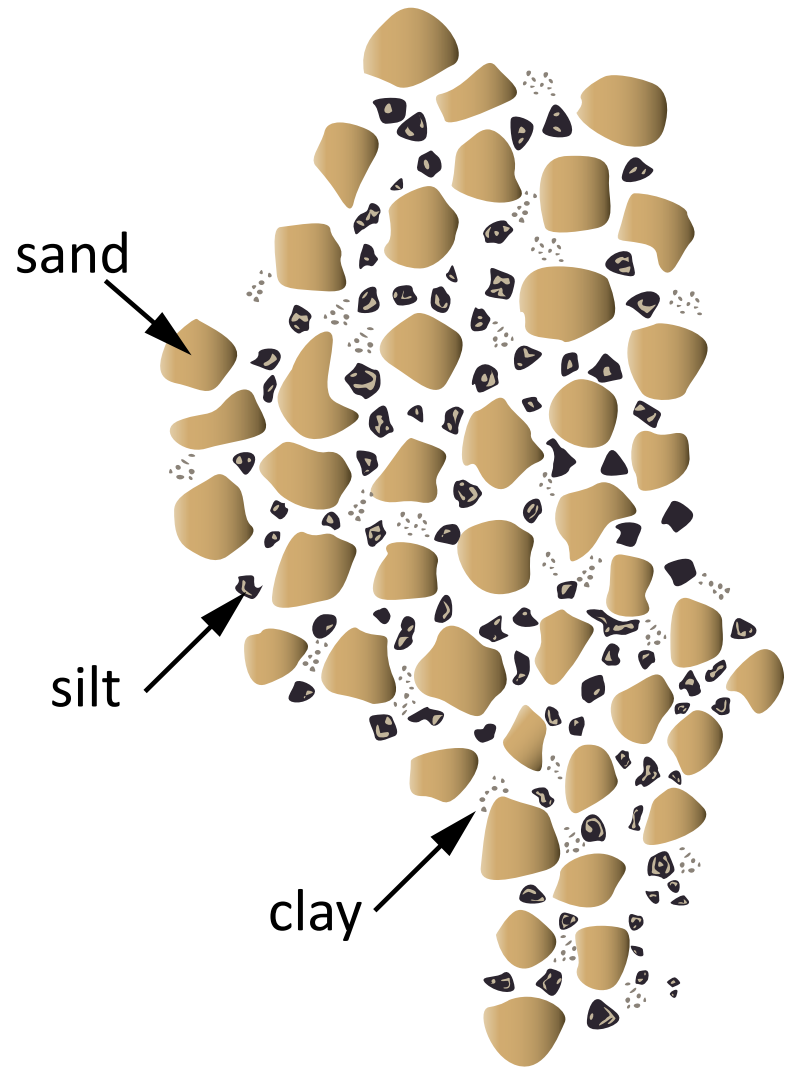
Silt is an example of rock material.

Soil may be different colors such as tan or black, depending on what rock it came from.

Silt feels like powder when it is dry and is slippery when it is wet.



Silt particles are smaller than sand particles and larger than clay particles. They are very small and hard to see with just your eyes or a hand lens.



Clay is an example of rock material.



It has very small particles, even smaller than silt.

Clay soils are usually red, gray, or white.

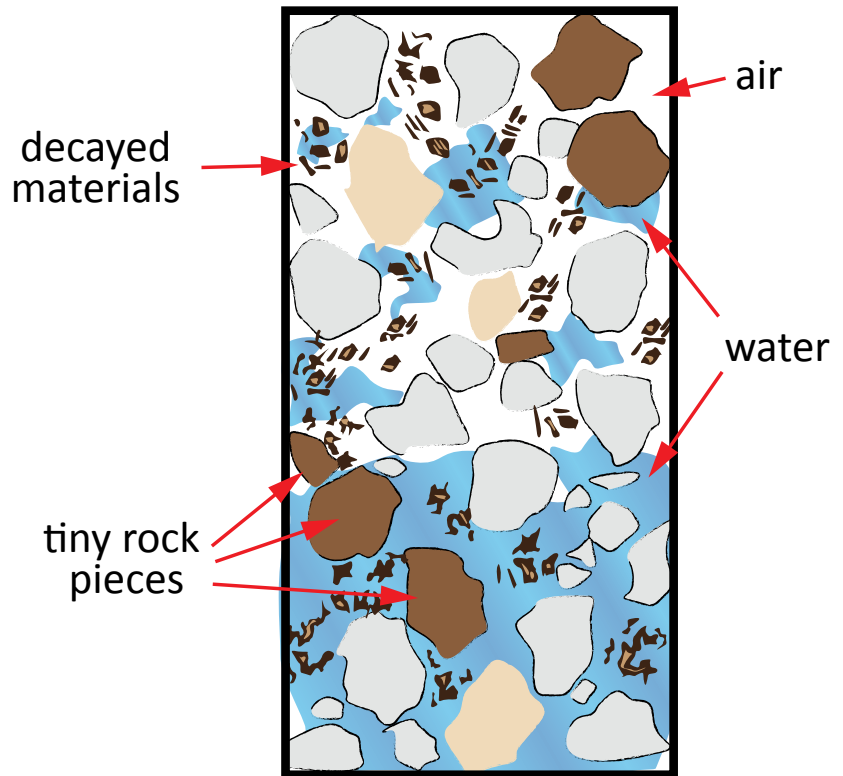


Clay soil drains slowly, gets sticky and heavy when wet, and sticks to your hands and shoes.



Did you know air and water are important components of soil?

Air and water fill the spaces between the decayed materials and the rock particles.



There are different amounts of air and water in different types of soil.

Some plants grow better in soil with more water.



Others grow better in soil with less water.

See for yourself!

Shake and Settle Soil Investigation

- Using a funnel and your soil sample, fill an empty water bottle half full of soil.
- Fill the bottle with water, add a small drop of liquid dish soap, and secure the lid.
 - What happened when you added water? Record your observations in your notebook.
- Shake the bottle vigorously and make observations.
 - What do you see? Record your observations in your notebook.
- Observe the bottle after one hour. Record your observations in your notebook.
- Observe the bottle again at the end of the school day and at the beginning of school the next day. Record your observations in your notebook.



You should be able to observe different layers in the container.

Decayed materials will be on top and possibly float in the water that fills the remaining space.

Clay will be in the top layer.

Silt will settle above the sand. Sand and any pebbles in the soil will fill the bottom layer.



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