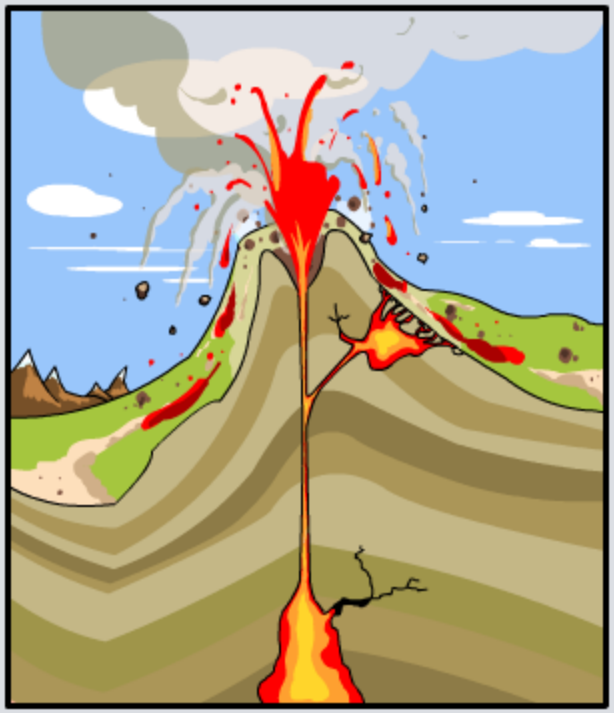
Igneous Rocks

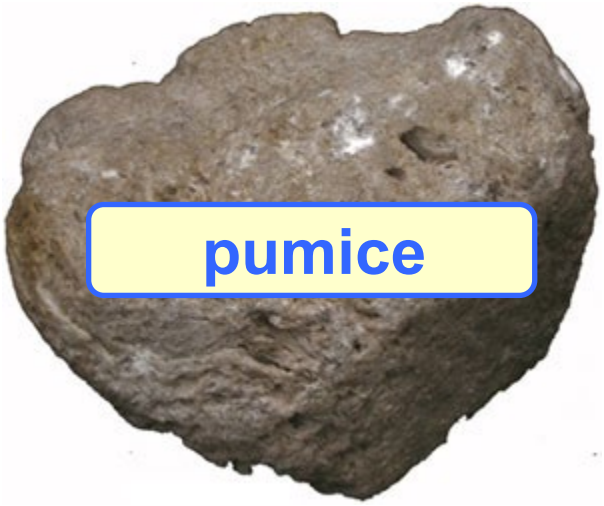


What are igneous rocks?

The name “igneous” comes from the Latin word for fire. Where do you think this suggests that igneous rocks are formed?

Igneous rocks are formed in, and around, volcanoes.

What are some examples of igneous rocks?

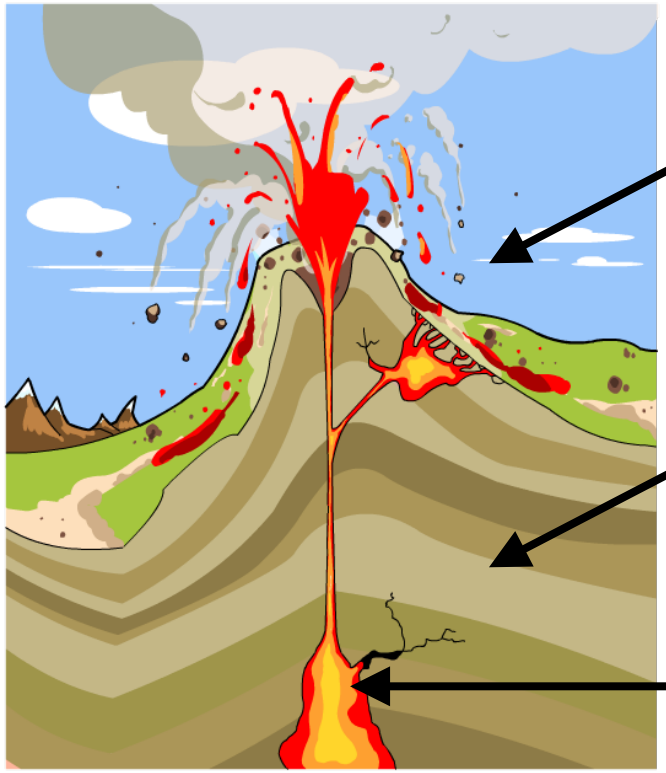


How are igneous rocks formed?

Magma is a type of molten rock found deep underground. Occasionally magma rises up through the Earth's surface, causing volcanic eruptions.

Igneous rocks are formed when the magma cools and solidifies.

- When magma cools **above the surface**, **extrusive** igneous rocks are formed.
- When magma cools **below the surface**, **intrusive** igneous rocks are formed.



Properties of igneous rocks

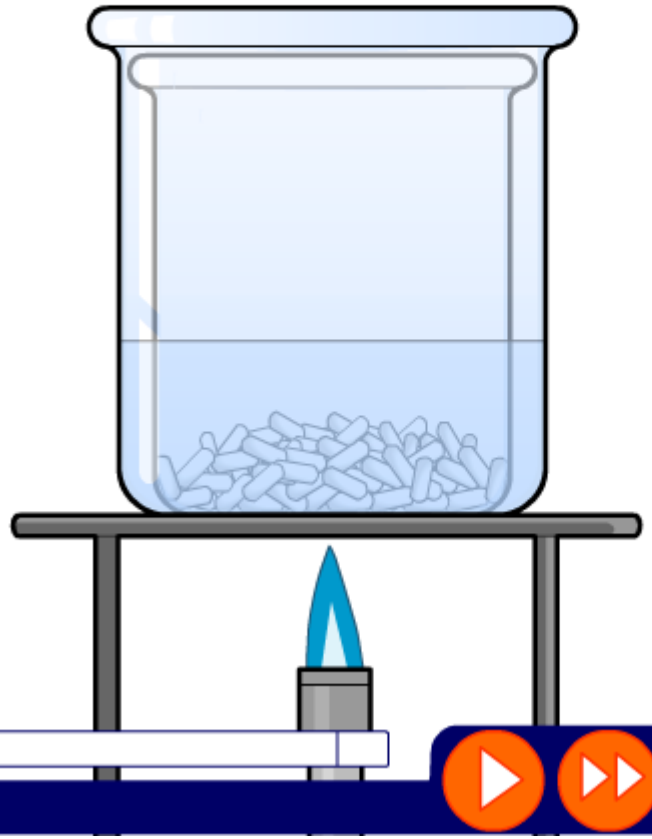
How are the properties of igneous rocks different from metamorphic and sedimentary rocks?

- Igneous rocks contain interlocking crystals that are held together very strongly and make the rock hard.
- The crystals in igneous rocks have a disorderly arrangement.
- The size of the crystals depends on how quickly the igneous rock solidifies.
- Igneous rocks never contain fossils.

Crystal size in igneous rocks

Are the size of the crystals found in igneous rocks determined by the rate at which the magma cools and solidifies?

Click "**play**" to find out.



Crystal size in igneous rocks

Magma is full of minerals that turn into crystals under the right conditions. Magma above the Earth's surface cools quickly, causing only small crystals to form.

This is how extrusive igneous rocks like pumice and basalt are made.

Magma below the Earth's surface cools more slowly. There is time for large crystals to grow as the magma solidifies.

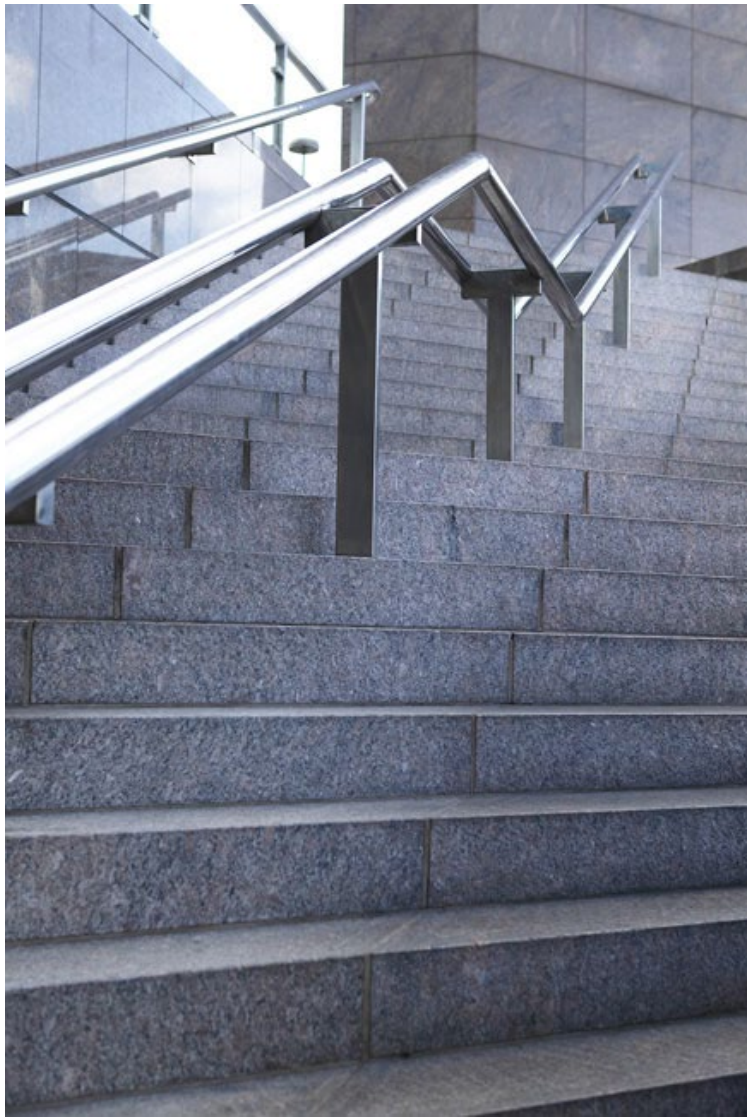
This is how intrusive igneous rocks like granite are formed.

What is granite?

Granite is an intrusive igneous rock. It is an extremely hard rock, and contains many large crystals.

Granite is found all over the world, but is commercially quarried in India, Brazil, South Africa and Scandinavia.

Because it is so hard, granite is often used as a flooring and exterior cladding material, as well as decorative material in worktops in kitchens and bathrooms.



What is pumice?

Pumice is a pale gray extrusive igneous rock, made up of very small crystals.

It is formed when bubbles of volcanic gas pass through magma as it solidifies.

Because of this, pumice contains many air pockets, making it extremely light and porous.

These lightweight properties mean that pumice is often used as a component in cinder blocks. Its rough surface also means that it is useful as an exfoliating (scrubbing) tool.

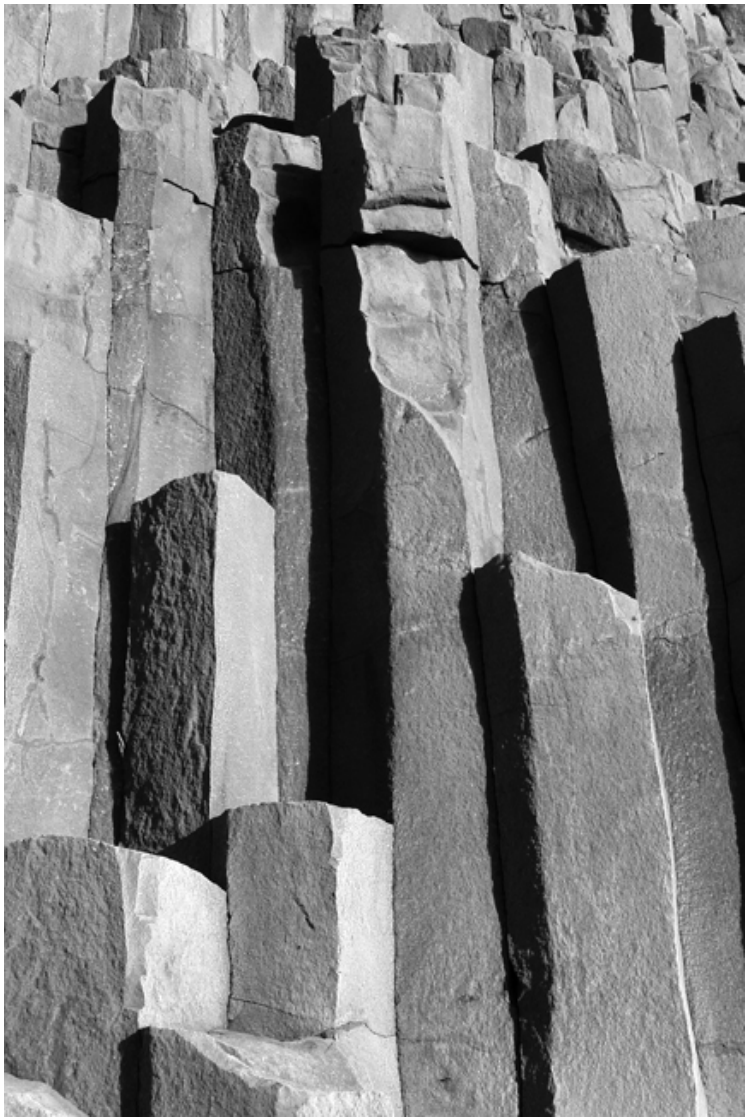
What is basalt?

Basalt is a dark glassy extrusive igneous rock.

Basalt contains very small crystals, and is often found in nature as huge columns of rock.

Traditionally basalt has been used to make weapons, tools, jewelry and carved sculptures.

Today basalt is also used in the production of cement and road surfaces.



Working with rocks

Geologists are scientists who study rocks.

They look at rocks and use their observations to draw conclusions about the Earth.

- Some geologists study rocks to learn about the history of the Earth and how it was formed.
- Some use their work to try to find deposits of valuable minerals and fossil fuels.
- Others try to predict earthquakes, tsunamis and volcano eruptions.

Working with volcanoes

Scientists who study volcanoes are called **volcanologists**.

They are skilled at monitoring the changes in active volcanoes that can indicate when an eruption might occur.

Monitoring equipment is very expensive and there are not enough resources to watch every active site in the world.

This can make studying volcanic activity quite a challenge.