**ACTIVITY: Lost – a hot rock**

**Activity idea**

In this activity, students examine an igneous rock and synthesise these observations into a poster that includes characteristic features of igneous rocks.

By the end of this activity, students should be able to:

* carefully observe rocks and carry out tests on them
* identify the characteristics of igneous rocks
* synthesise their investigations into a wanted poster.

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**Introduction/background**

Igneous rocks have the following characteristics:

* There is no layering (sedimentary rocks are layered).
* No fossils are present.
* Crystals are present.
* They may be fine grained or glassy looking.
* They may contain small holes where gases have escaped.

In this activity, students are directed to examine a rock (carry out some geological tests) and then synthesise these observations into a poster.

**What you need**

* Examples of igneous rocks (granite, rhyolite, basalt, obsidian, pumice, scoria)
* Pen knives
* Magnifying glasses
* Vinegar
* Droppers
* Poster paper
* Crayons or coloured pencils.

**What to do**

1. Explain to the students what geologists do as rock detectives. When they are looking for special rocks they have special techniques for finding out more about the rocks they are looking at. Just like a detective they look for clues that tell them where the rock has come from – sometimes they can even tell how it has been made.
2. Explain that each student will do some rock detective work. After they have found out all they need to know, they will make a poster to make sure that, if ever their rock gets lost, it will be found very easily.
3. Have each student choose a rock they think is interesting and give them a rock detective kit – pen knife, magnifying glass, small bottle of vinegar and dropper, and a notebook to record careful observations.
4. Ask students to carry out the following tests on their rock to see if it is an igneous rock (formed from magma) and write down all the things they have discovered:

* Try to scrape your rock with a pen knife. Do any bits come off? This could be a clue that it is a sedimentary rock.
* Look at your rock very carefully with a magnifying glass. What colour is it? Can you see any crystals? What colour are they? Would you describe your rock as fine-grained or coarse-grained? Are there any fossils in your rock?
* Carry out the acid test on your rock. Sedimentary rocks sometimes fizz when acid (vinegar or lemon juice) is added. Does your rock fizz?

1. Ask each student to make a poster headed ‘LOST – A HOT ROCK’. Have them draw a coloured picture of their rock on the poster and then label all the features that they have seen. Remind them to include everything so that, if their rock gets lost, another geologist – like them – would know what to look for.

**Discussion questions**

* What are the main features of your rock that would help you identify it immediately?
* How did you know that it was a volcanic rock?
* Did you see any crystals? What colour were they? How many types of crystals did you see?

**Extension activities**

Geologists are able to describe igneous rocks in even more detail. They can tell from the texture of the rock whether it has cooled immediately as the magma erupts. These rocks are called volcanic rocks (extrusive igneous rocks) as they erupt from volcanoes. They are recognised because they have small crystals and are fine-grained because they cool quickly.

Rocks that stay beneath the ground as they cool are called plutonic rocks (intrusive igneous rocks) – they have large crystals in them and are coarsely grained.

* Give your rock a family name. Is it Mr Volcanic or Mrs Plutonic?
* Why do you think your rock is in this group?

Geologists can also tell rocks that have lots of silica in them. These rocks are light-coloured, and those with most silica are called rhyolitic rocks. Rocks with least silica in them are basaltic rocks.

* How can you tell that your rock has high amounts of silica?