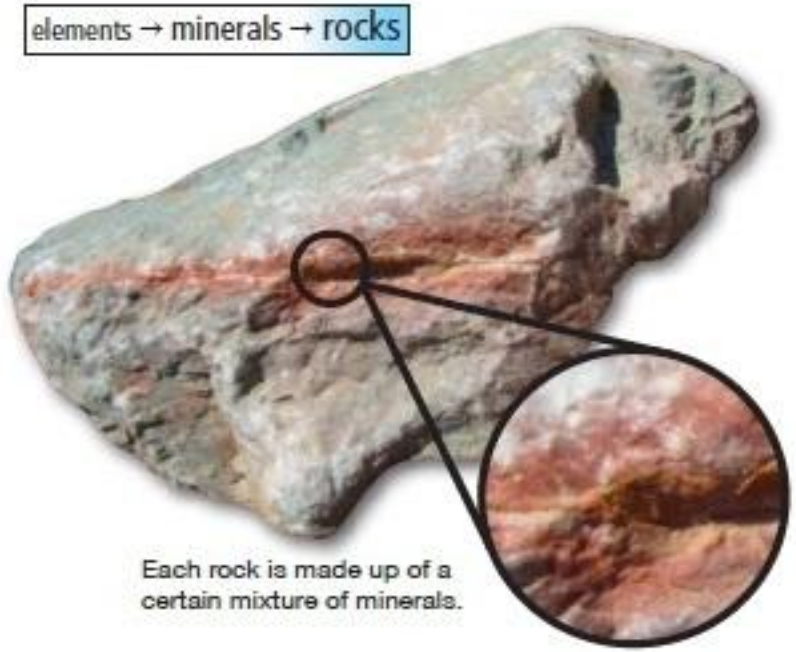
Rocks

Rocks

A **rock** is a hard, solid material. It is found in nature. Most rocks are made of different minerals.

Look at a rock. It might have many colors and patterns. These are the bits and pieces of different minerals. The mix of minerals in one kind of rock helps you tell it apart from other kinds of rocks.

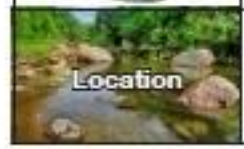
elements → minerals → rocks



Each rock is made up of a certain mixture of minerals.

You can describe and compare rocks in many ways. Look at the chart. It shows you how to describe and compare rocks.

HOW TO DESCRIBE AND COMPARE ROCKS

 Mineral composition	Rocks have a special mixture of one or more minerals.
 Size	Rocks can be huge boulders or small pebbles. They can be as big as a mountain or as tiny as a speck of dust.
 Shape	Rocks can be flat, round, square, or almost any other shape.
 Color	Rocks come in every color you can imagine. Many rocks have more than one color. It depends on the colors of their minerals.
 Texture	Some rocks feel very rough, while others are smooth. They can have tiny grains; large, smooth chunks; or long, pointed crystals. Some rocks are full of airholes.
 Hardness	The Mohs Scale of Hardness compares how hard each mineral is within a rock. Talc is rated a 1 (very soft), and diamonds are rated a 10 (very hard).
 Patterns	Rocks may have streaks, waves, or straight lines. They may have dots everywhere or be built layer upon layer. Some rocks do not have a clear pattern.
 Location	An important way to describe a rock is by where in nature it is found. A beach may have different rocks than a forest, desert, or volcano.

Weathering and Erosion

Rocks can change shape or size. They can also move from one place to another.

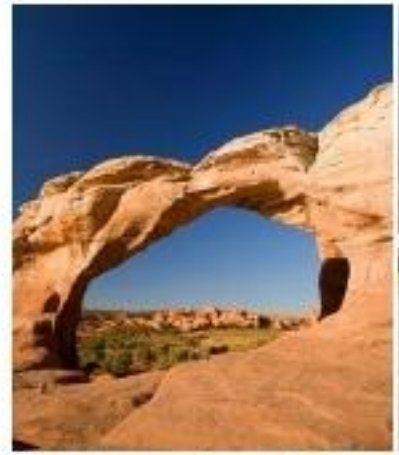
Weathering can change the shape or size of rocks. Moving water and wind can make rocks become smooth and round or break into pieces.

A tree is splitting a rock. This is an example of *mechanical weathering*.

Water can seep into cracks in a rock and freeze. The ice can break the rock apart. If a plant's roots grow into a crack in a rock, pieces of the rock can break off.

Chemicals in rocks can change, too. Minerals such as salt fall apart or dissolve when mixed with water or chemicals.

Acid rain has changed the minerals in this gravestone. This is an example of *chemical weathering*.

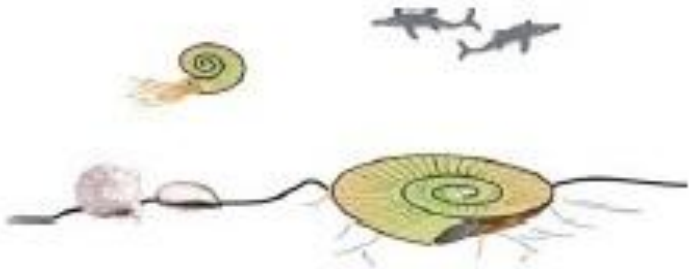
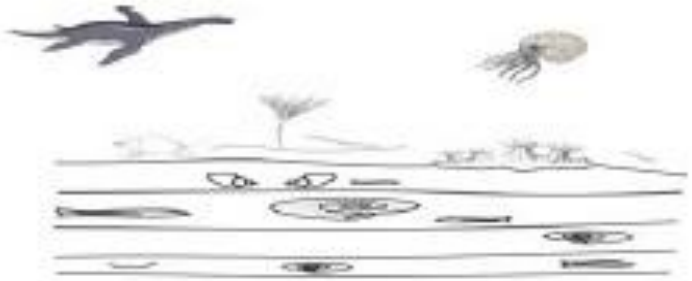
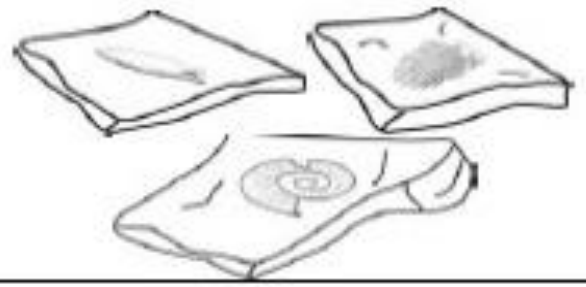


An arch caused by weathering

A rockslide caused by erosion

Erosion moves rocks. Wind and water move loose pieces of rock from one place to another. As some rocks move, they create more erosion by making other rocks move. This moving and bumping can cause large boulders to break into smaller rocks. A big rock can become stones, pebbles, sand, or even dust.

Other forces cause erosion, too. A glacier is ice that is slowly moving. It carries loose rocks downhill. Earthquakes or heavy rain can cause landslides. Gravity makes loose rocks tumble down mountains.

	Reconstituirea simplificată a unui mediu de viață marin din Mesozoic.
	Resturile de animale, după moartea acestora, se depun şi sunt treptat acoperite de sedimente. In figură este prezentată o cochilie de amonit. Nu toate organismele pot lăsa resturi fosilizabile.
	Pe măsură ce sedimentele se acumulează, resturile sunt îngropate tot mai adânc şi suferă numeroase transformări datorită unor procese fizice şi chimice.
	O parte dintre resturile fosile păstrate pot ajunge la suprafață şi pot fi colectate sub forma unor eşantioane. Acestea conțin impresiuni, mulaje, resturi de cochilie sau părți scheletice.

How hard is the rock?

Some rocks are soft and crumbly whilst others are very hard and strong

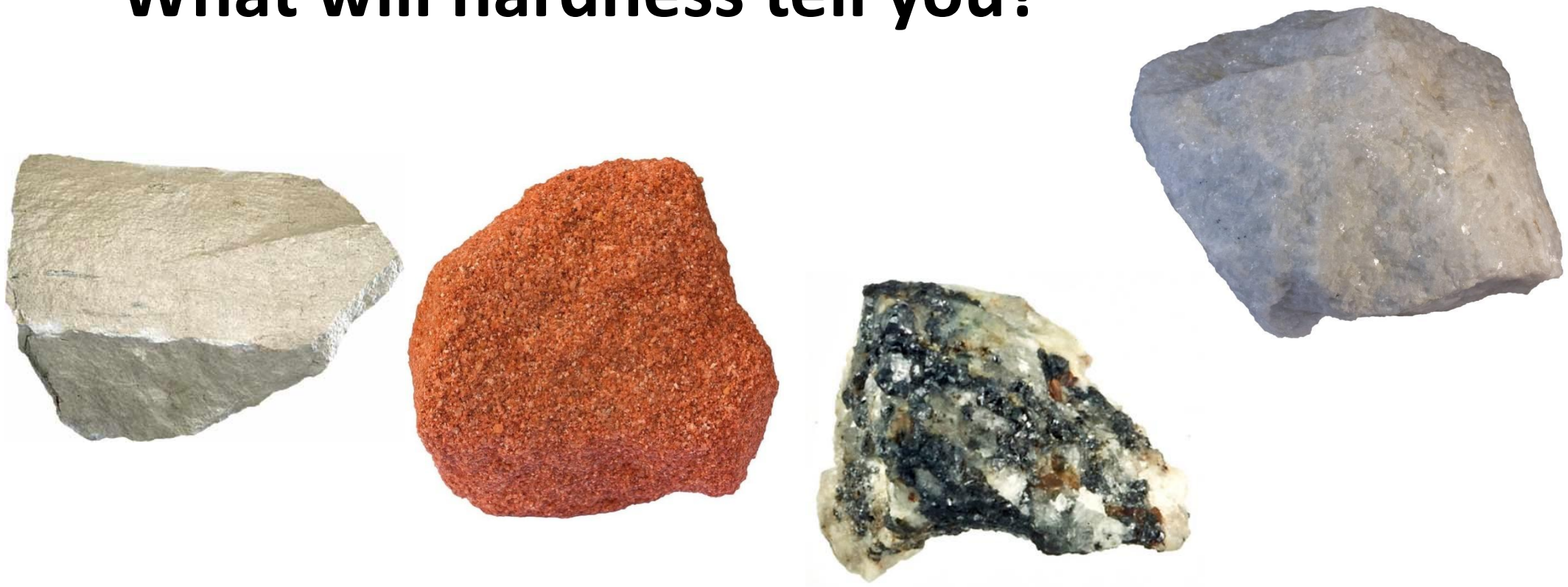
Mohs Hardness Scale

Hardness	Meaning
1	Softest known mineral - it flakes easily when scratched by a fingernail.
2	A fingernail can easily scratch it.
3	A fingernail cannot scratch it, but a copper penny can.
4	A steel nail can easily scratch it.
5	A steel nail can scratch it.
6	Cannot be scratched by a steel nail, but it can scratch glass.
7	Can scratch steel and glass easily.
8	Can scratch quartz.
9	Can scratch topaz.
10	Hardest known mineral. Diamond can scratch all other substances.

Try a hardness test on your rock samples

- Can you scratch them with different items?
- Which items will scratch them and which will not?
- Can you crumble them?
- Can you put them in order from the softest to the hardest?

What will hardness tell you?



Sedimentary rocks are usually a lot softer than igneous and metamorphic rocks

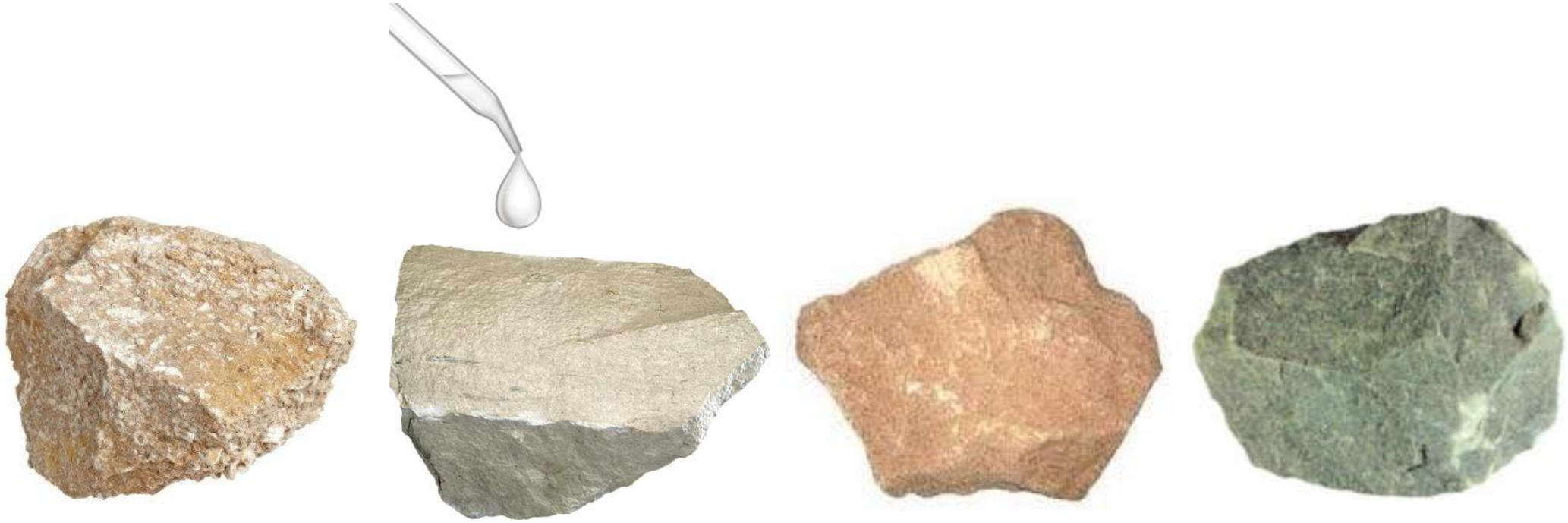
The Water Test

How did you make it fair?

Which rocks were permeable?

Which rocks were impermeable?

Will water soak into it?



Try dropping a small amount of water on your rock samples and watch to see if it soaks in

What will this tell you about your rocks?

If water can soak into a rock or pass through it, we say it is a permeable rock.

Sedimentary rocks are usually permeable.

If water can not soak into a rock, the rock is said to be impermeable.

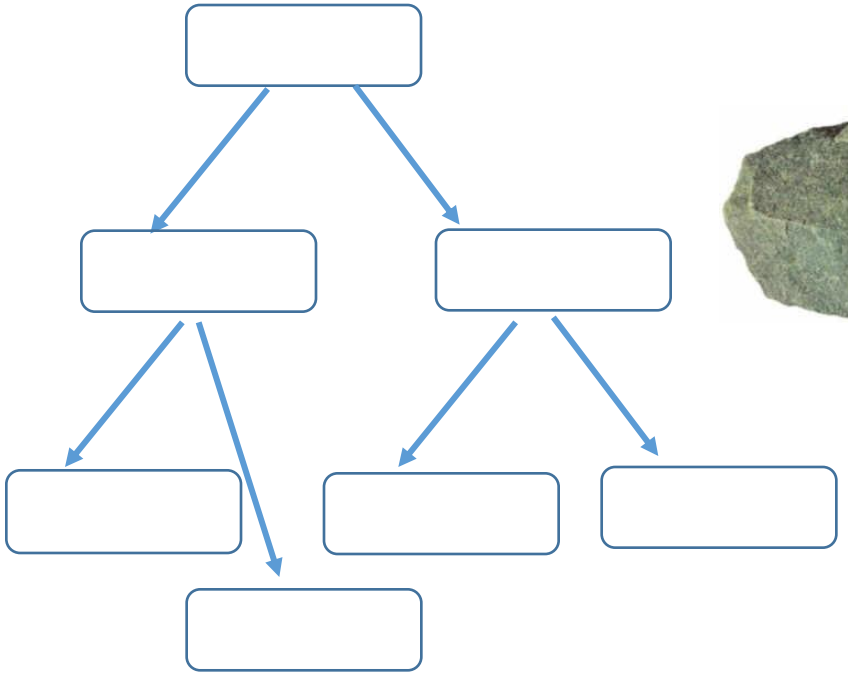
Metamorphic and igneous rocks are often impermeable.

The acid test

Vinegar is an acid. Try dropping a small amount of vinegar on your rocks. Then look carefully to see if it fizzes.

What will this tell you about your rocks?

The Rock Identification Key

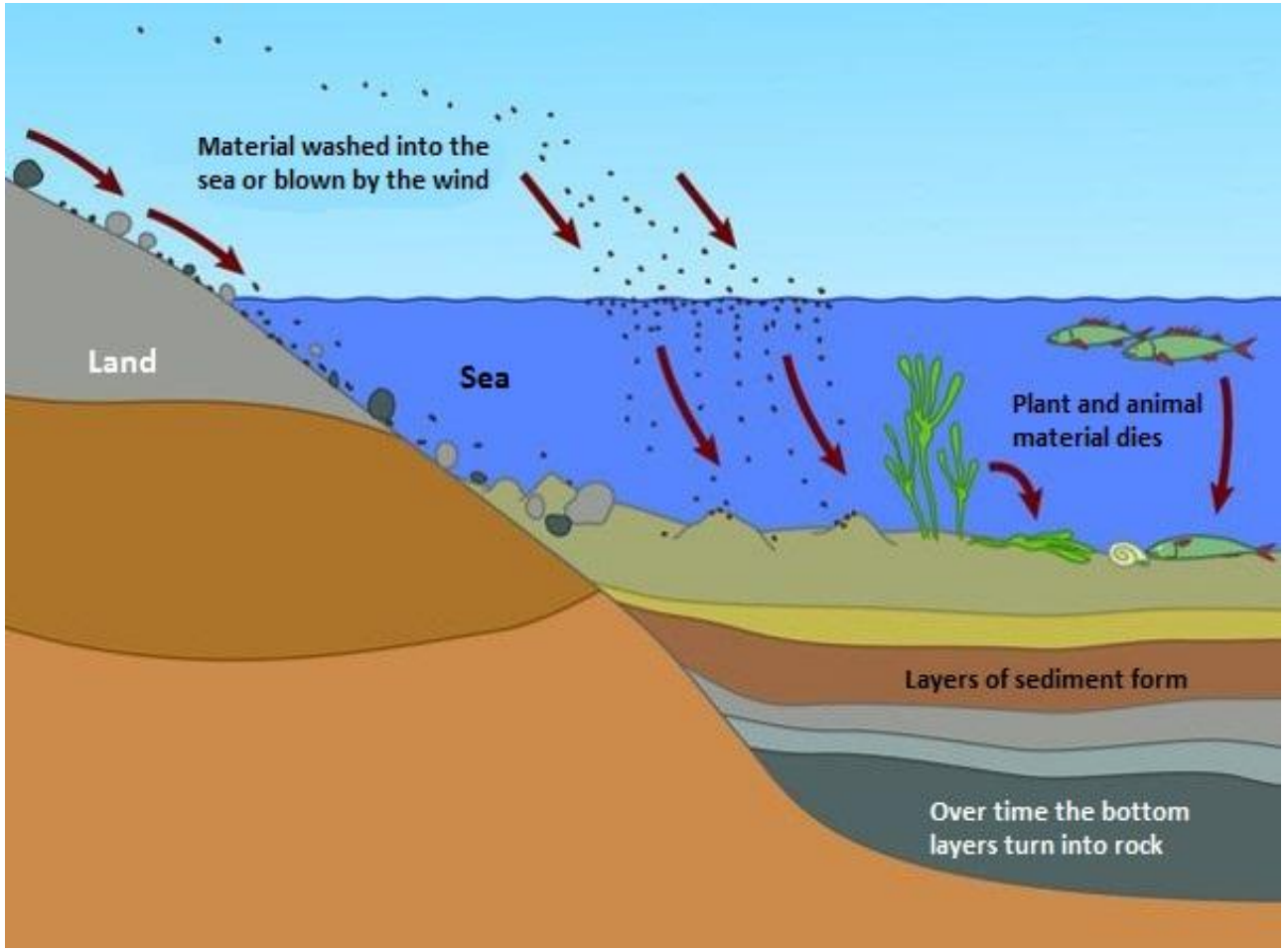


Which of our rocks fizzed when you added acid?

Probably chalk, limestone and marble

What does that tell us?

These rocks are made from the shells of animals that lived long ago!



Remember that sedimentary rocks can contain the bodies of sea creatures that died long ago. Their shells dropped into the muddy sediment and became buried. After millions of years they were turned to rock.

If a rock was once the shells of creatures, it will fizz when acid is dropped onto it.

Some metamorphic rocks will fizz too if they were once sedimentary rocks that contained shells and were then changed by great heat or pressure.

If your rock has stripes or layers it will probably be a sedimentary rock

Some landscapes show the layers of sediment that have turned to rock. You may have seen them at the seaside.

But some metamorphic rocks may also have layers if they used to be sedimentary rocks but were changed by heat or pressure!

If your rock has crystals it will probably be an igneous rock or an igneous rock that has become a metamorphic rock because it has been changed by heat or pressure.

Look at your Key

Which of our rocks are sedimentary?

sandstone, chalk, limestone, shale and conglomerate

Which rocks are igneous?

granite, pumice and basalt

Which rocks are metamorphic?

marble and slate