

# Suzy's World

## Moeraki - What are these boulders made of?

### Fact

- The boulders are septarian concretions – which means they are rocks that have been formed by sediments being cemented together.
- Calcium carbonate – lime – in the seawater dropped to the ocean floor and collected around solid objects sitting in the mud and sand.
- Over thousands of years more sediment dropped to the floor and collected around these “balls” of lime.
- The boulders were formed on the ocean floor about 60 million years ago.
- The piece of beach that the balls are sitting on was once deep beneath the ocean but that piece of the earth's crust has shifted up and out of the ocean exposing the boulders.



### Did you know

- There are boulders like this all over the world and some have been formed in the same way.
- It took about 120,000 years for the soft lime stone balls to dry out and become these hard rocks.
- There used to be hundreds of these boulders on the beach but some people have taken the smaller ones as souvenirs.

### Experiments you can do

Put a piece of chalk in a dish or on a saucer and place 3 or 4 drops of vinegar on the chalk. What happens?

Chalk is made from limestone (calcium carbonate) like the Moeraki Boulders. The vinegar is an acid which reacted with the chalk giving off bubbles of gas called carbon dioxide. (Just like the boulders did when I spilt lemon juice on them.) Try a few drops of lemon juice on the chalk, do you get the same reaction?

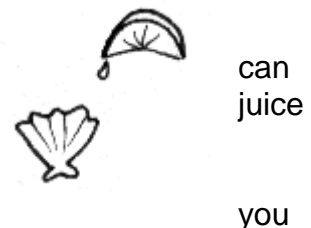
### Other Investigations

Use the great scientific tools you have – your eyes to find interesting formations in your area.

Do you have any septarian concretions like the Moeraki Boulders?

If you have a beach cliff face near where you live see if you find shells buried in the sand. Put a little vinegar or lemon on the shells and see if you get a reaction creating CO<sub>2</sub> (carbon dioxide).

Do you know about the pancake rocks in Westland? See if you can find out how they were formed.



### Saying

When you visit the beach take nothing but photos and leave nothing but your footprints.

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