



Weathering and Erosion

What Is Weathering?

Weathering is the process of wearing away rocks!



There are different types of weathering:

- physical weathering
- chemical weathering
- biological weathering

Can you guess what might happen in each of these processes?

What Is Erosion?



Watch this video which explains how water can shape the landscape through transportation of rocks.

<https://www.bbc.co.uk/bitesize/clips/zrh634j>



Modelling Types of Weathering and Erosion

Try each of the investigation activities shown on the next slide (if you have the resources at home). You could also take photos of your investigations.

The photos required for the 'biological weathering' activity are provided on the slides.

Use the activity sheet provided on the slide after the activities to record your answers (draw a table in your green book).

Physical Weathering

The plastic bottle is filled with water and has been left in a freezer overnight.

1. Look carefully at the level of the water in the bottle. Record what you notice.
2. If rainwater collects in cracks in rocks and freezes, it will expand. What might happen to the rock?

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Chemical Weathering

1. Put a teaspoon of bicarbonate of soda on your plate.
2. Use the dropper to carefully add a drop of vinegar to the top of the powder.
3. Look carefully at what happens to the powder.
4. Rain water is slightly acidic. What could happen if acidic rain falls onto rocks such as limestone?
5. Now, empty your plate into the bin and leave the equipment ready for the next group.

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Biological Weathering

1. Look at the picture of the tree. What do you notice about its roots?
2. Look at the picture of the brick wall. What do you think might have caused this damage?
3. Look at the picture of the steps. Why do you think the centres are lower?
4. What do you think the plants growing on the stone cross are? How have they damaged the stone?

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Erosion

1. Cover the board with a 1cm layer of sand. Use the straws to blow across the surface of the sand. Record what you see happening.
2. Use the block to raise up one end of the board.
3. Carefully use the jug to pour water down the middle of the sand layer. Record what you see happening.
4. Now, put the sand back into the container and leave the equipment ready for the next group.

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Physical Weathering

What do you notice about the level of the water in the bottle?

Chemical Weathering

What happened to the powder when you added the vinegar?

Biological Weathering

How has the rock been damaged in each picture?

Erosion

What happened when you blew across the surface of the sand?

What happened when you poured water through the sand?

What Did You Find Out?



Physical Weathering

What had happened to the water in the bottle?

Water is unusual; it expands when it freezes.



If rainwater falls into a crack in a rock and freezes, it will expand. If this happens many times (called the freeze–thaw cycle) a crack in the rock will widen and could split the rock!

Chemical Weathering

What did you notice happen to the powder as you added the vinegar to it?

The bubbles show you that a chemical change is happening.

The acidic vinegar is reacting with the bicarbonate of soda and producing CO₂ gas.



Rain water is slightly acidic. If acidic rain falls onto rocks such as limestone, over time it will dissolve some of the rock.

Biological Weathering

What caused the weathering in each case?



Roots from trees and other plants may grow into or under rocks with such force that they can cause damage or even split the rock in two!

Erosion

What happened when you blew through the straw over the sand?

Sand particles blew away.

What happened when you poured water onto the sand?

The water forced a small channel to open up as it carried sand downhill.



- Wind can blow away loose particles of rock.
- It can also carry away loose particles of rock.
- If these loose particles hit other rocks, over time they will cause the rock to wear away.