



Coastal Creations!

The cliffs at Alum Bay on the Isle of Wight display layers of rainbow of colours, but why is it like this?

What are The Needles formations and why are they like this?

This resource looks at the physical processes that created these features.



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knowing why it's like this!

It's really rather complicated, but we're going to keep it simple...

A long, long time ago, (about 70 million years!) the sea level was much higher than it is today, and warm shallow seas covered the Isle of Wight. These seas were home to sharks and rays, and over 500 different types of shellfish lived in them.

The Isle of Wight is made of sedimentary rocks, which were formed at this time under the sea. The remains of animals (e.g. bones and shells), and eroded sediments carried to the sea by rivers, accumulated on the sea bed. This debris built up in layers, and over millions of years these were compacted so tightly under pressure from above, that rocks were formed. At Alum Bay you can see several different types of sedimentary rock: The multi-coloured sandstones of the Bay (the colours are due to varying mineral composition), a narrow band of brown London Clay, and the steep white chalk cliffs extending out to The Needles.

Activity 1: Can you label these rock types on the image below?



Activity 2: Find a good place to sit on the beach, making sure that you are well away from the base of the cliff and not too close to the sea either! You are going to draw a field sketch of the cliffs at Alum Bay.



Now that you have completed your sketch, do the following:

- Label as many different colours as you can see
- Label the vertical layers
- Label any evidence of erosion that you can see (e.g. cracks in the cliffs or evidence of recent landslides)
- Label any evidence of human activity that you can see. (Extension: and b) drawbacks of human activity in this location?)

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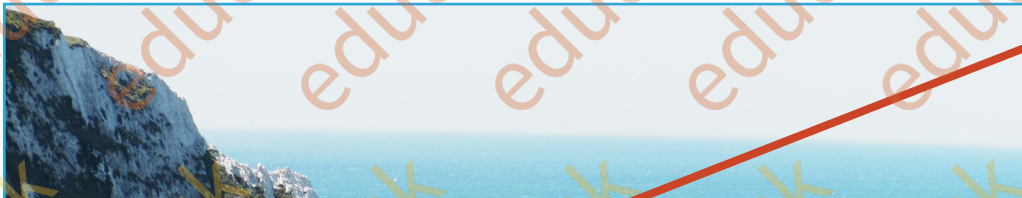
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Spiky Stacks!

Looking over towards the mainland, you will spot several spikey rocks jutting up out of the sea? What are they, and how did they get here?

These geographical features are called **stacks** and they are formed by **erosion**.



Former
Headland

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Once upon a time, these stacks would have been attached to the chalk **headland** that you can see (approximate former headland shown with line).

However, constant thrashing and pounding by the sea has resulted in erosion of the exposed headland.

Erosion would have widened **cracks** in the rock to form small **caves**.

These caves would gradually enlarge and cut all the way through to the other side of the headland to form an **arch**.

Over time, the roof of the arch becomes weaker and weaker and eventually collapses, and all that is left is an isolated pillar of rock – a **stack**!

Activity 3

Using the information on page 3, draw a diagram in each of the boxes below to illustrate the stages in the sequence of the formation of a stack.

Then, write a short caption to go with each.



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