Colourful Cliffs and Spiky Stacks!

Welcome to Alum Bay, known for its array of colours in the cliffs, and the spiky rock pillars that jut out beyond the headland into the Solent: The Needles.

Millions have visited, photographed and enjoyed these natural wonders and homes around the world have a glass memento filled with these rainbow sands. However, not that many leave knowing that much about the geography behind these fascinating features.

Colourful Cliffs!

To cut a very long story short…

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. There are actually many different types of sedimentary rocks on display here, and the labelled image below shows what you can see, and the approximate age of each rock type:

Education Destination

RED FUNNEL

Most experts agree that the range of colours here is due to oxidation of pyrite, either in the past or more recently, which has resulted in the red and brown colours of iron oxides or hydroxides.

Ferrous sulphate also produces green-coloured melanterite and the yellow-coloured jarosite. There are bands of brown-black lignite and grey clays.

Another thing that you may notice if you look closely at the cliffs is that there are clearly visible layers running vertically.

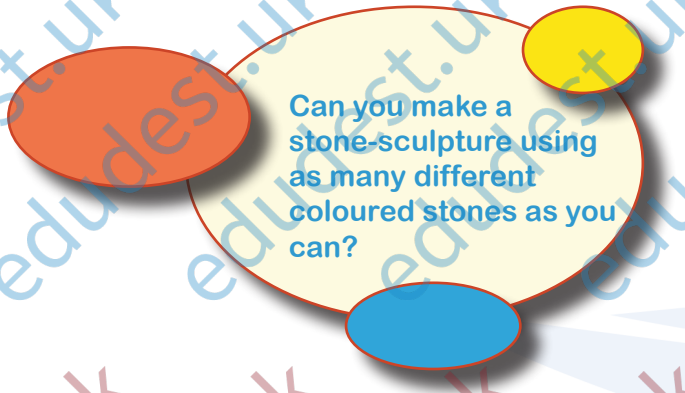
When these rocks were first formed, they would have been laid down as horizontal beds.

However, dramatic collisions of the world's tectonic plates have led to them being pushed upwards and folded into their present, near-vertical, position.

Colour count: How many different colours can you spot in the cliffs?

Treasure Hunt: Can You Find

- ❑ A piece of eroded sandstone (like the one in the picture)
- ❑ 5 other pebbles/rocks of different colours, representing the colours of the cliffs
- ❑ A rock/pebble with a hole in it
- ❑ Evidence of the positive impact of human activity at this site
- ❑ Evidence of the negative impact of human activity at this site
- ❑ Evidence of the instability of the cliffs at this site
- ❑ Something that you think looks attractive
- ❑ Something that you think looks unattractive



Spiky Stacks!

Looking over towards the mainland, you will spot several spiky 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.**

They form on headlands where continuous erosion attacks cracks in the headland to form a cave, which widens and breaks through to form an arch, the roof of which eventually collapses to leave an isolated pillar of rock; a stack.

Which order do you think that the following pictures go in to show this process?




Needles Knowledge!

The Needles are believed to be named after a Needle that is, in fact, no longer there.

Like the gap in a row of teeth, you can clearly see where it would once have stood in the image (right). This slim, sharp rock, known as 'Lot's Wife', was the tallest of the four (120ft).

A great storm here in 1764 is said to have caused the collapse of this stack and it is said to have been felt in Portsmouth. Even though the three remaining pillars are nowhere near as needle-like as Lot's Wife was, the name has remained.

If you take a walk, or a bus ride, up to see The Needles formation up close you will find out a lot more about the human and physical environment here.

Explore the area and the exhibits/information points and see if you can complete the following…

Name this yellow flower:

Use your compass direction at The Needles point?

Give a fascinating fact that you have learnt about the rocket-testing that took place here:

How high above sea level are you up here?

Name two features here that aim to keep ships and sailors safe?

Name a type of bird you may see: