

Bracelet Bay Geotrail Worksheet



To use this worksheet you will need access to **Google MyMaps**

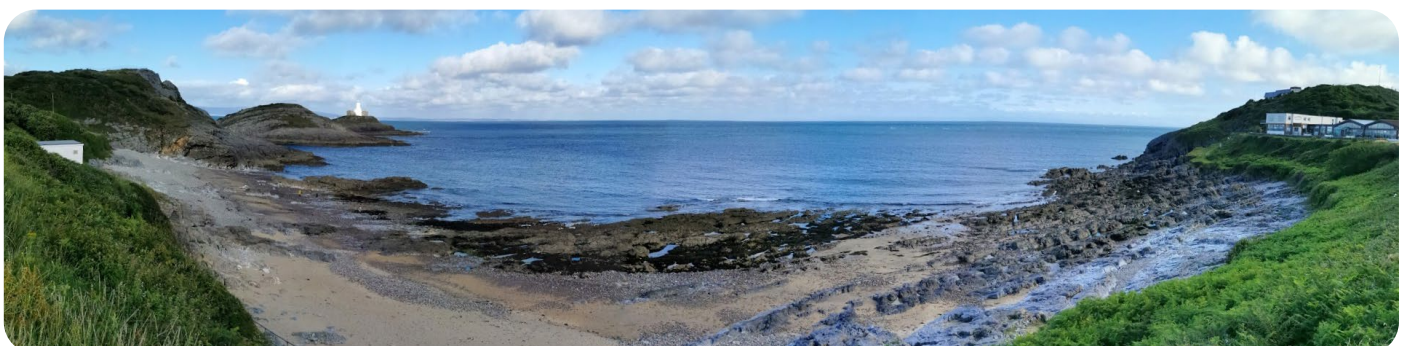
[Click here to go to the Bracelet Bay Geotrail](#)

Introduction

This geotrail was inspired by the Scratching the Surface geology and landscape walks series by Dr Geraint Owen. It covers a broad range of geological concepts including sedimentary rocks, minerals, fossils, mountain building, folding and faults. This walk also begins to introduce 3D visualisation of structures, stress fields and using sedimentary features to interpret past environments.

How to use this worksheet

The location of each stop is indicated on Google MyMaps. Each stop has an explanation with accompanying photographs showing key features of the site. This worksheet provides activities that can be done at each of the stops. Answers can be found at www.s4science.co.uk/geotrails/geologytrails/braceletbay.



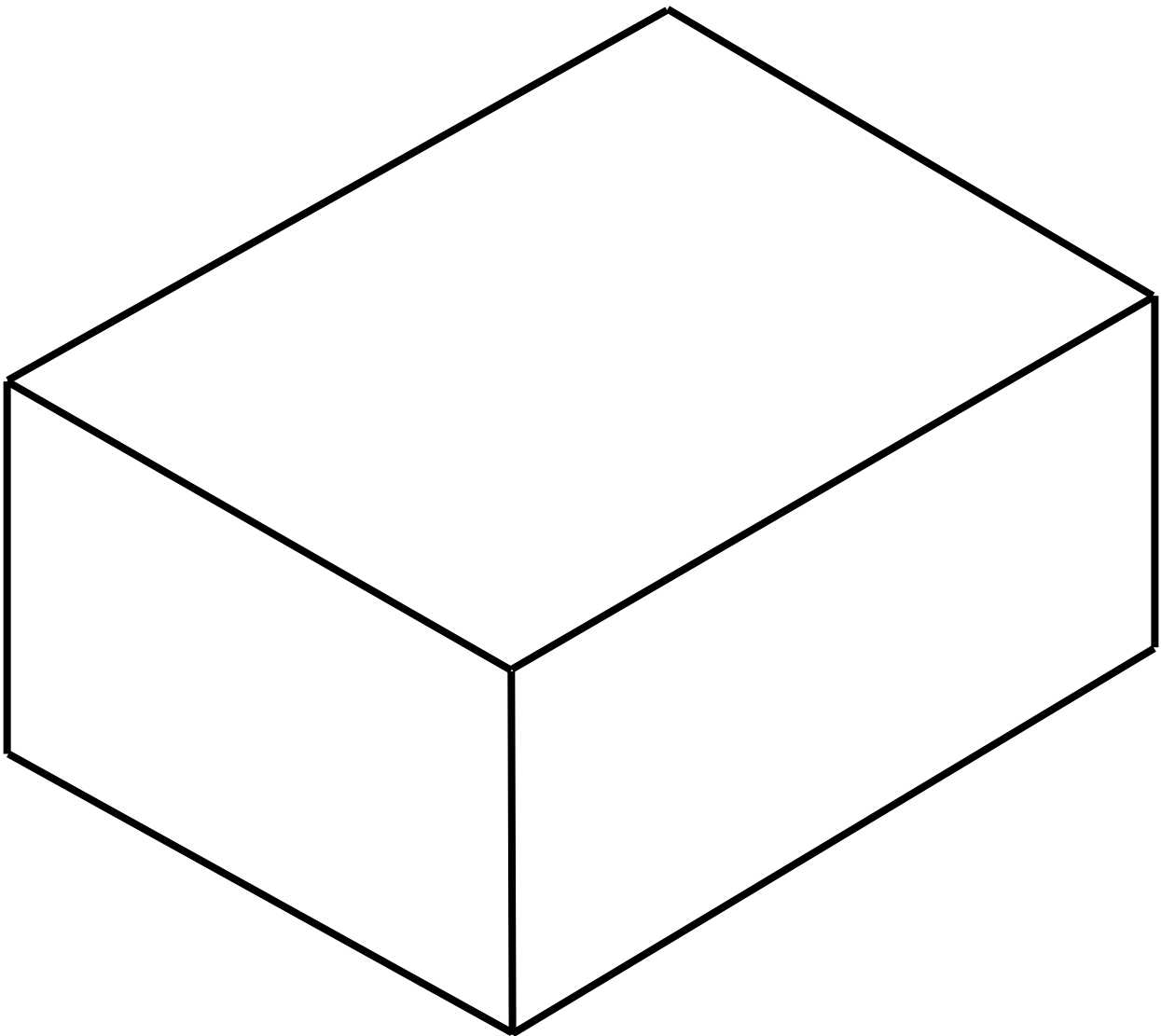
Step 1: Plunging anticline

Activity

3D visualisation

To help visualise the anticline bend a sheet of paper or card into an arch, lean the arch forward to give the fold a 'plunge' and then imagine slicing a horizontal surface through it. This creates a pattern like the curving layers you see in Bracelet Bay.

Q1. Draw a plunging anticline on the block diagram below.



Stop 2: Fossil spirit level

Q1. What type of stress forms:

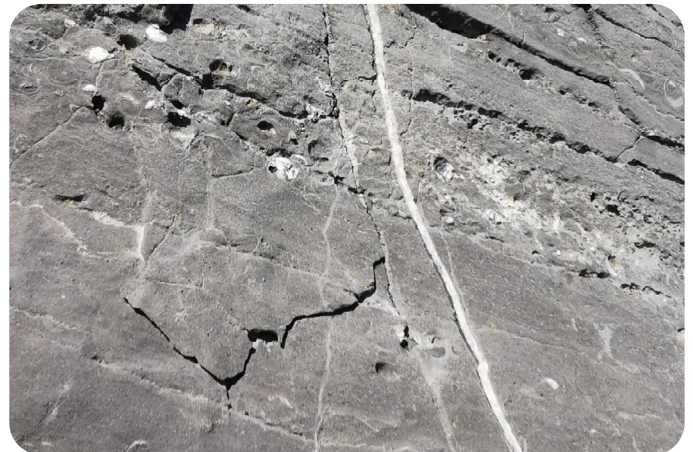
i) stylolites

ii) veins

Q2. Find a surface where you can see stylolites and calcite veins. Look at the relationships between them. What is the angle between the majority of the veins and the stylolite surfaces? Why might this be?



Stylolite



Calcite vein

Stop 3: Fault calcite

Q1. What type of stress would have been needed for the elongate calcite crystals to grow?

Q2.. Bearing in mind your answer to Q1, what type of fault is this likely to be?



Elongate calcite crystals



Calcite with characteristic rhombic cleavage

Field Notes and Sketches

Stop 4: Crystal formations

Q1. This site is a good place to see calcite crystal. Calcite can often be confused with quartz. List the tests you could use to differentiate between the two.



Quartz crystal



Calcite crystal

Step 5: Ancient fossil reef

Activity

Erratic pebbles

Spend a bit of time looking at the pebbles on the beach. Make piles of each of the different rock types you find and try to identify them.



Q1. The fossil reef contains mainly brachiopods and sponges. Is this a true representation of the biodiversity of this reef? Explain your answer.



Brachiopod fossils



Sponge fossil

Stop 6: Oncoliths

Q1. Draw an oncolith.

Remember to add a scale and label your sketch

Stop 7: Pseudobreccia

Q1. Why are there no fossils of the organisms that made the burrows?



Pseudobreccia on Tutt head

Field Notes and Sketches

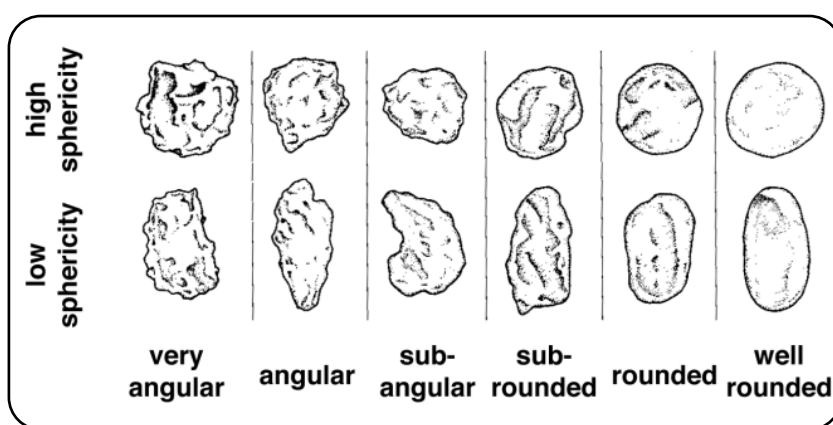
Step 8: Glaciation

Q1. Look at the clasts that make up the periglacial head. How many different rock types are there and what is the dominant rock type?

Q2. Using the categories in the diagram below, what is the average roundness of the clasts in the periglacial head deposit?



Periglacial head



Power's Roundness Chart

Q3. Bearing in mind your answers to questions 1 and 2, where is the likely source of the material making up the periglacial head?



Wind-blown sand

Stop 9: Shear zone

Q1. Draw a field sketch of the shear zone. Label your sketch to indicate the direction of movement across the shear zone.

Remember to add a scale and label your sketch

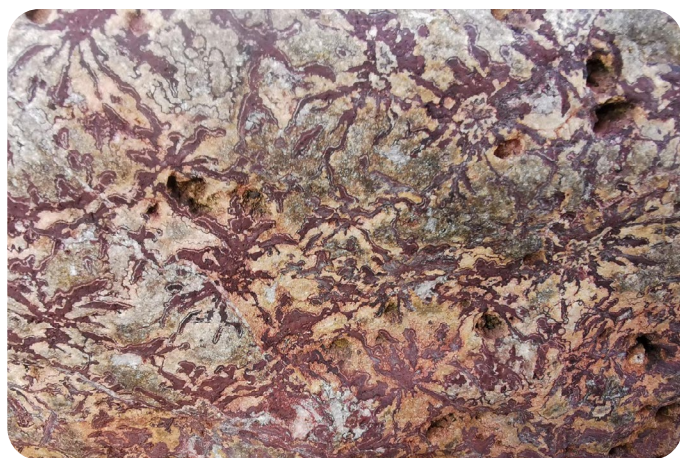
Q2. What is the difference between an oncolith and an ooid?

Stop 10: Old haematite mine

Q1. What properties of haematite could you use to identify it in the field?



Haematite and calcite vein fill



Haematite 'stars'



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geotrails/geologytrails](http://www.s4science.co.uk/geotrails/geologytrails)

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