

© UKRIGS Education Project: Earth Science On-Site

Funded by Defra's Aggregates Levy Sustainability Fund, administered by English Nature.

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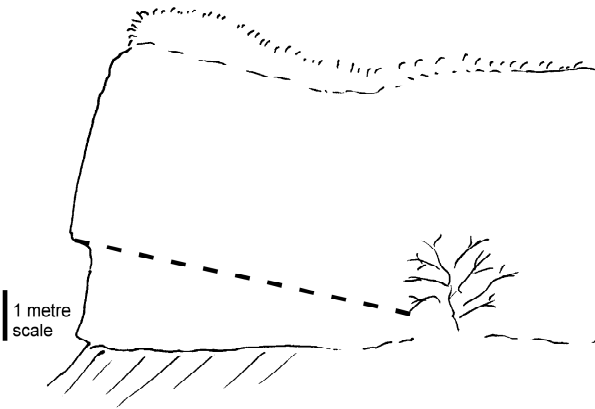
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PUPIL WORKSHEET 1

PUPIL NAME

Site 1: The Fenced Cliff



Match this diagram with what you can see in the cliff face.

One rock layer or bed has been sketched in for you. Try to sketch in another one you can see.

Mark on this diagram:

1. The oldest bed
2. The youngest bed
3. Soil with trees
4. Scree made of sand and broken rock

Use your diagram to answer these questions:

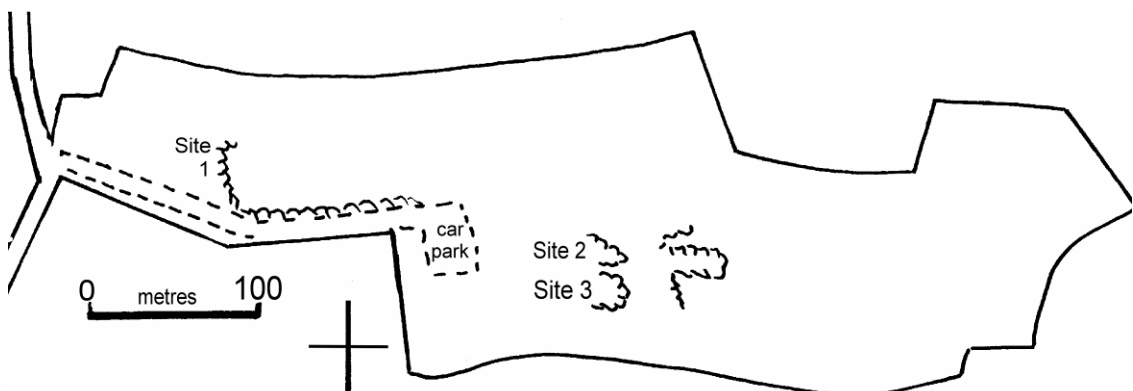
1. In which direction do the beds of rock slope down towards [dip]?

They slope in a _____ direction.

2. Use the scale bar to find the height of the quarry face to the nearest metre

The quarry face is _____ metres high.

On your map, below, make sure you have marked the North point. Use a compass to check.



PUPIL WORKSHEET 2

PUPIL NAME.....


Site 2: Sloping Beds

Describing the rocks

TASK	WRITE YOUR ANSWERS HERE
Write down why the rocks are layered. [You might have done an experiment in school with water and sediments like sand and mud]	
How many different types of rock can you see?	
Write down the way these rocks look different from each other.	
What name is given to this group of rocks?	

A close look at Ragstone.


[The hard layers [beds] are called "ragstone" and were quarried for use in buildings and for making roads. Take a closer look at a loose piece lying around.]

TASK	WRITE YOUR ANSWERS HERE
Write down what happens to the ragstone when you rub it with your fingers?	
Write down the name of the hard glassy mineral you can see in the rock with a magnifier	The mineral is _____
Describe any other minerals you can see.	
Circle the words which best describe the shape of the grains.	Fairly rounded. Fairly angular or Mostly in - between
Use the 1mm grid to measure the size of the grains and circle the answer.	 Over 1mm, about 1mm, or under 1mm
Look at the creamy material sticking the grains together. If it is tested with a drop of dilute acid what happens?	
This is calcite mud, which sticks all the grains. Write down the name we give to a rock containing so much calcite?	The name of the rock is _____ stone.
You might be able to find fossil shells of sea creatures. What does this tell us about where these rocks were formed?	

PUPIL WORKSHEET 3

PUPIL NAME.....

3. Now look closely at the softer, sandy beds. These are called "hassock".

TASK	WRITE YOUR ANSWERS HERE
What happens when you rub hassock with your fingers?	
Look at the sand grains with a magnifier. You should be able to see the grains made of a hard glassy mineral. What is it called?	The mineral is _____
There is also a very fine smooth material, grey-brown in colour, which helps to stick the grains together. What is it called?	
Describe any other minerals you can see.	
Circle the words which best describe the shape of the grains:	Fairly rounded. Fairly angular or In between
Use the 1mm grid to measure the size of the grains and circle the answer.	 <div style="display: inline-block; vertical-align: middle; margin-left: 20px;">Over 1mm, about 1mm, or under 1mm</div>
If this rock is tested with a drop of dilute acid what happens?	
The sand grains are stuck together mostly by clay mud. What do we call a rock containing mostly sand?	The rock is called _____ stone
You might be able to find fossil shells of sea creatures. What does this tell us about where these rocks were formed?	

PUPIL WORKSHEET 4

PUPIL NAME.....

4. We have found out that these rocks formed under the sea. The fossils found here tell us that this was about 115 million years ago, early in the Cretaceous Period. The rocks are now above sea level, are tilted, folded and broken by cracks called joints.

TASK	WRITE YOUR ANSWERS HERE
How do you think all this happened?	
Write down the direction in which the rocks here are tilted [dip]. [Use a compass to find out.]	The rocks here dip in a _____ direction
Look back to Site 1 and write down the direction in which the beds were sloping there? Is it the same or different from here? Circle your answer.	The beds are sloping _____ wards Same direction Different direction

5. Look at the top of the quarry. You may notice that the beds of rock have been worn away over all those years, long before the quarrying took place.

TASK	WRITE YOUR ANSWERS HERE
What do we call the sandy/clayey material lying on top of the rocks? Your teacher may collect a sample for testing back in school.	
As well as sand and clay, what else is it made of?	
Describe where the tree roots are growing	
Try to name some plants growing in the new soil on the scree slopes.	
Even on the hard surface of the limestone you should find places where tiny plants are growing. Try to describe and name any you see.	
What clues have you found to show that two animals live in the soil in this area?	

PUPIL WORKSHEET 5

PUPIL NAME.....

6. You might have wondered why this area is called Dryhill. Perhaps it is something to do with being without water!

Test the limestone and sandstone with a water dropper. If water soaks in, the rock is porous. If not, it is not porous.

TASK	WRITE YOUR ANSWERS HERE
Test the limestone (ragstone) with a water dropper. What happens to the water? Is this rock porous?	
Test the sandstone (hassock) with a water dropper. What happens to the water? Is this rock porous?	
There don't seem to be many streams or ponds in the area. Where do you think the water goes to when it rains?	I think the rain goes _____ _____
What do we call the place where water comes out of the ground naturally?	

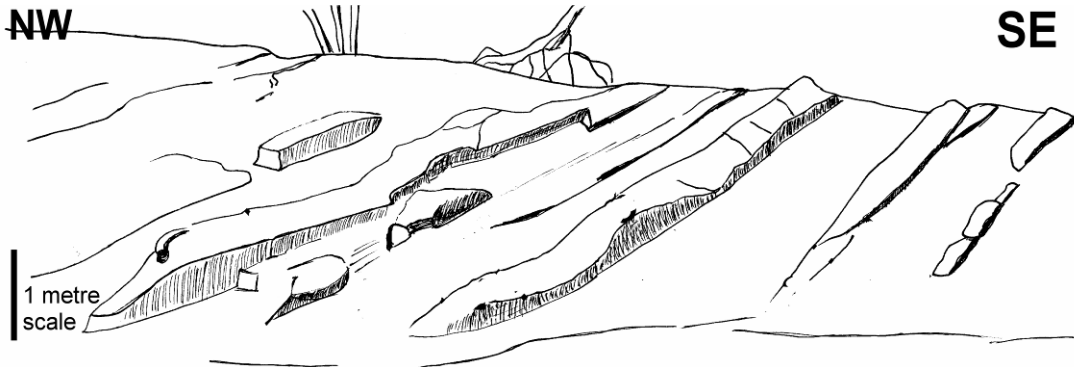
7. We have already mentioned that the limestone [ragstone] was quarried for use as a building stone and as an aggregate for making roads.

TASK	WRITE YOUR ANSWERS HERE
What is it about the limestone that makes it so useful for buildings and roads?	
What else might the limestone be used for?	
What might the sandstone be used for?	

PUPIL WORKSHEET 6

PUPIL NAME.....

Site 2: Sketch Of The Sloping Beds Site



After you have completed the activity sheets 2, 3, 4, and 5 you should be able to match this diagram with what you can see in the old quarry face. Several beds have been sketched in for you.

Task: Mark on the sketch above:

- | | |
|--|---|
| 1. Oldest bed of limestone; | 2. Youngest bed of limestone; |
| 3. A bed of soft sandstone; | 4. Soil with trees; |
| 5. Tree roots forcing the rocks apart; | 6. Place where weathered sand collects. |

Use your diagram to answer:

8. In which direction do the beds of rock slope down towards [dip]?

The beds slope in a _____ direction.

9. Use the scale bar to find the height of the quarry face to the nearest metre

The height of the quarry face is _____ metres.

Site 3: Folded rocks. Something interesting has happened to the layering in the beds of rock. At site 1 the layering slopes [dips] to the south. At site 2 the layering slopes [dips] to the north.

TASK	WRITE YOUR ANSWERS HERE
In which direction do the beds slope [dip] in this quarry?	
What do we call beds which dip in different directions like this?	We call it a _____
Try to explain what happened.	

PUPIL WORKSHEET 7

PUPIL NAME.....

Site 2: SLOPING BEDS SUMMARY. (This can be used as an alternative to worksheets 2 to 5.)

On our visit to Dryhill we have found out a lot about the rocks beneath our feet.

1. Are the rocks jumbled up or layered?

They are _____

2. How many different types of rock have you found?

We have found _____ types of rock.

3. The softer rock made mostly of sand grains is called a _____ stone

4. The harder rock is made of some sand grains but is mostly made of calcite (lime) mud which cements it all together.

It is a _____ stone

5. You might have found shells of ancient sea creatures. What are ancient remains of animals and plants called?

They are called _____

6. Were these rocks formed on land, or in the sea? (Your first 6 answers will help you to decide)

They were formed _____

7. Sand and mud are types of sediment. What is the name given to the large group of rocks, including sandstones, mudstones and limestones?

They are called _____ rocks

8. What has happened to the rocks after they were formed on the sea bed about 115 million years ago?

They have been _____

9. The limestone has been quarried in the area for hundreds of years. What are the two main uses made of it?

It has been used for _____ and _____

Now complete worksheet 6 – sketch of site 2