



Science

Scientists and Inventors

Stonehenge



Aim

- To identify evidence that supports or refutes scientific theories about Stonehenge.

Success Criteria

- I can discuss why Stonehenge is special.
- I can identify evidence that supports or refutes the theory that Stonehenge was used as an astronomical calendar.
- I can explain my own theories, and describe the evidence that supports my ideas.

Stonehenge

Stonehenge stands on Salisbury Plain in Wiltshire. It is one of the world's most famous and recognisable monuments, and is estimated to be around 5000 years old!



Features of Stonehenge



This is how Stonehenge would have looked around 2000 BC. Think about what each feature might be. Click on the feature to find out more about it.

Outer circle



The outer circle was made from 30 standing stones. A continuous ring of horizontal stones sat on top of them.

Horseshoe



Five stone arches make up the horseshoe. These stones are around seven metres high.

Aubrey Holes



A ring of 56 chalk pits has been discovered around the stones.

Avenue



The avenue leads from the River Avon to Stonehenge, and is the entrance to the monument.

Bluestones

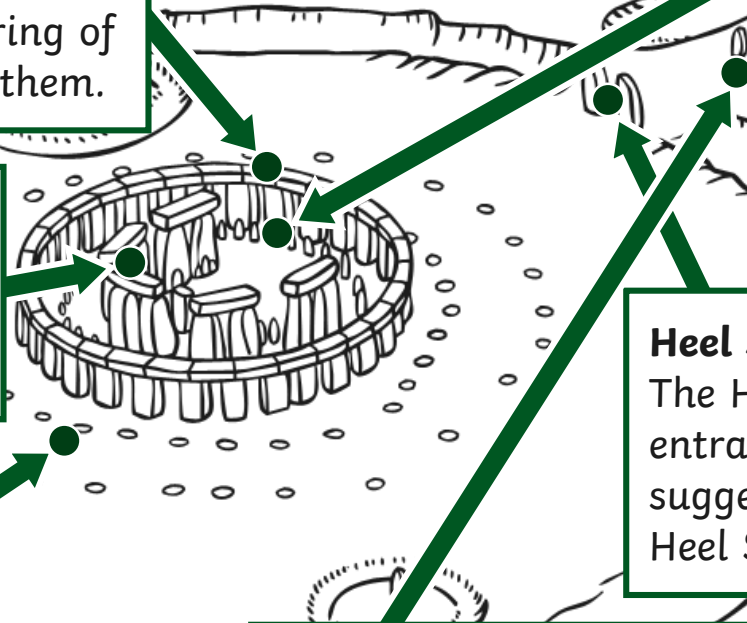


These are the oldest stones at Stonehenge. They form one circle inside the outer circle and another inside the horseshoe.

Heel Stone



The Heel Stone stands at the entrance to Stonehenge. Evidence suggests that there was a second Heel Stone next to it.



Why Is It Impressive?



Look at these facts about Stonehenge. Talk to your partner about which of these facts you consider to be most impressive, and why.

Some of the stones in the outer circle weigh 20 tonnes. This is equivalent to around 10 average-sized cars.

The bluestones came from an area in South Wales. Each stone weighs around four tonnes, and was dragged 240 miles over land and water.

It is estimated that the construction of Stonehenge would have taken around 30 million hours of work.

The stones were cut to shape using tools made from wood and stone.



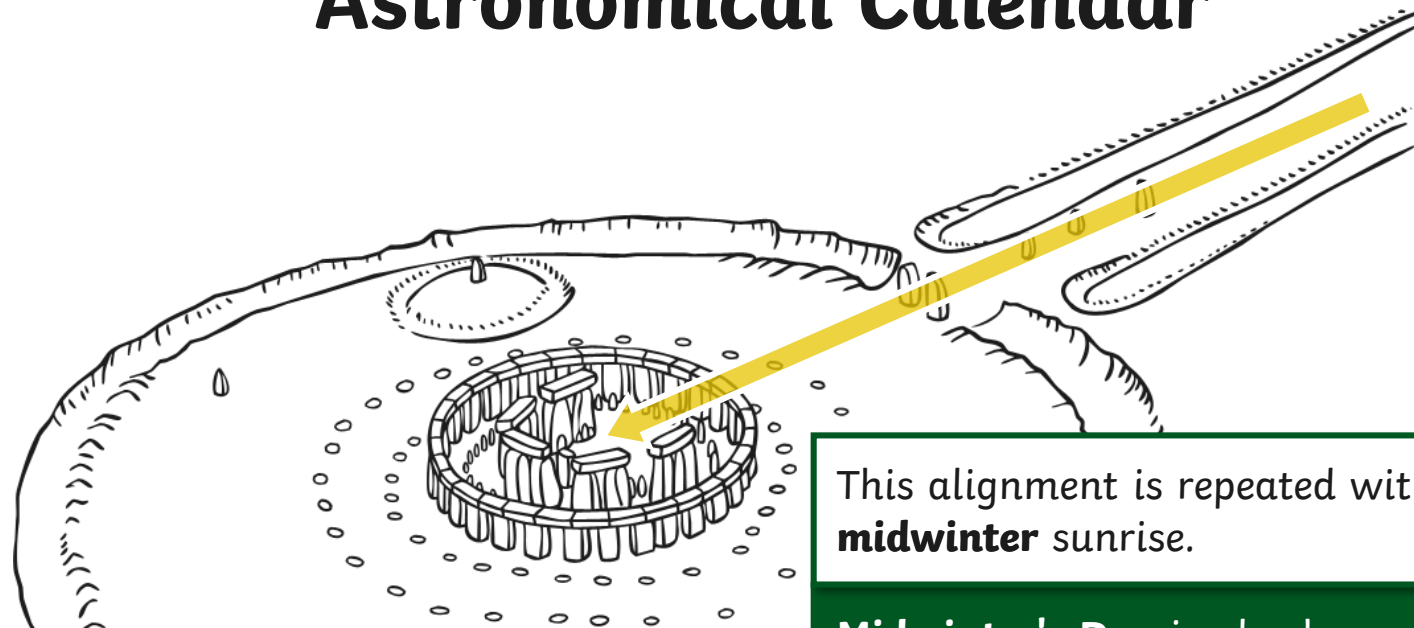
Ideas and Evidence

There are many theories about what Stonehenge was for. Some people believe that it was a place of healing for the ancient Britons, while others think the ancient people may have used it for religious ceremonies.

Many scientists have studied Stonehenge and have developed scientific theories about what it was used for.

By exploring Stonehenge carefully, some scientists believe they have found evidence that it was used as an astronomical clock or calendar. An astronomical calendar tracks the sunrise and sunset over the year, as well as other astronomical occurrences such as eclipses. However, other scientists think that there is not enough evidence to prove this.

Astronomical Calendar



Midsummer's Day is also known as the summer solstice. This is the longest day of the year, marking the end of Spring and the start of Summer.

This alignment is repeated with the **midwinter** sunrise.

Midwinter's Day is also known as the winter solstice. This is the day with the shortest period of daylight and the longest night of the year.

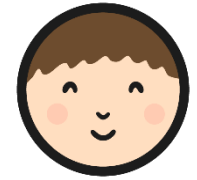
Some scientists suggest that the site of Stonehenge is arranged so that, on **midsummer**, the Sun rises near to the Heel Stone, or between the two Heel Stones, and then shines straight into the centre of the horseshoe.

Astronomical Calendar

The midsummer Sun rises over the Heel Stone.
If the second Heel Stone still stood, the Sun would rise between them.



Scientists' Theories



Many scientists have studied Stonehenge to explore the idea that it could have been used as an astronomical calendar. Some scientists have published evidence that supports this idea, whereas other scientists have found evidence that refutes it.

Look at the scientists' evidence on your **Scientists' Theories Activity Sheet**. Cut out each box of evidence and stick it in one of the columns on your **Support or Refute Activity Sheet**.

Scientists' Theories

I can identify evidence that supports or refutes the theory that Stonehenge was used as an astronomical calendar.

Cut out each box and decide if the evidence it contains supports or refutes the theory that Stonehenge was used as an astronomical calendar. Stick them into the correct column on your Support or Refute Activity Sheet.

In 1720, William Stukeley made an accurate scientific diagram of all the features of Stonehenge, and noticed that the Avenue and the Heel Stone were precisely aligned with the midsummer sunrise.

In 1963, Gerald Hawkins published his scientific analysis of Stonehenge. He had used a computer to discover over a hundred different alignments with the Sun, Moon and stars. He also suggested that the Aubrey Holes were used to predict lunar eclipses. He found evidence that posts or stones had been moved from hole to hole, suggesting a marker was moved around the circle to measure the passing of time and the movement of the Moon.

There are 56 Aubrey holes. In order to use them to track lunar eclipses, the ancient Britons would have had to move markers around the circle of holes over a period of 56 years. This has been proven by scientists to be an unreliable method for measuring eclipses, and that lunar eclipses would never repeat their date and position over the 56 years.

Some scientists think that the ancient Britons could not have known about astronomical events such as eclipses. Many lunar eclipses could not even be visible from Stonehenge.

Richard Atkinson published his ideas in 1966. He explained that some of the pits that Hawkins had referred to were naturally formed depressions, and were not dug by ancient people. He also shared his findings that the features used by Hawkins to find alignments were all added to Stonehenge at different times, so could not have been used together as Hawkins suggested.

Some scientists doubt that the ancient Britons could have observed or known about astronomical events such as eclipses. Many lunar eclipses could not even be visible from Stonehenge.

What Do You Think?



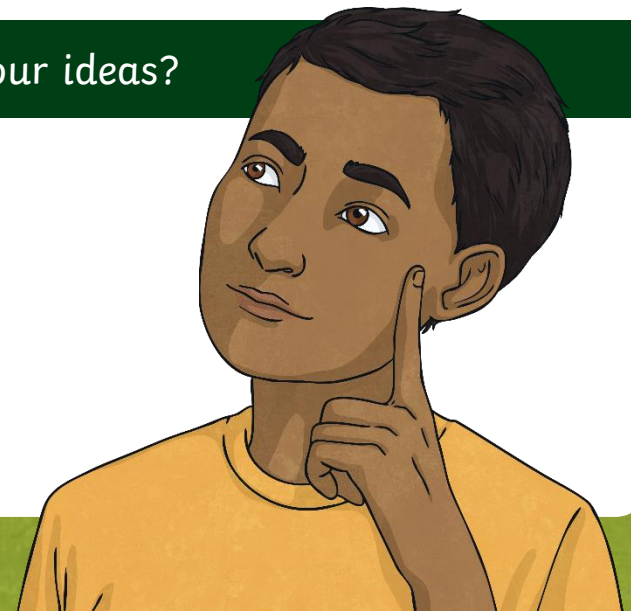
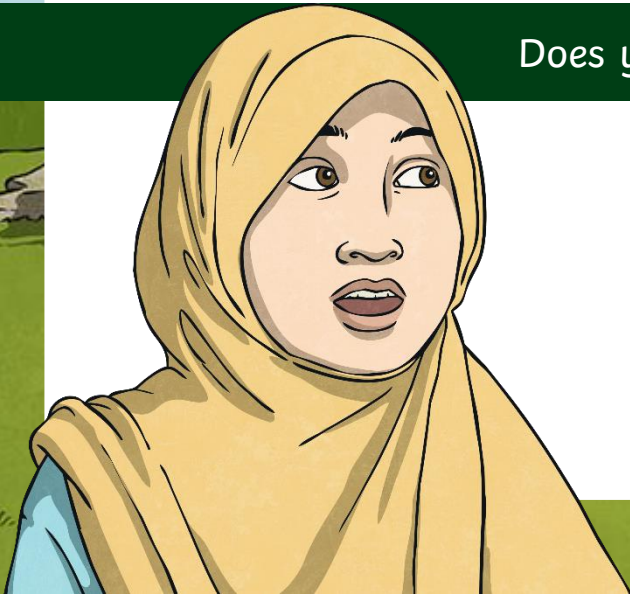
You have looked at some of the scientists' theories and their evidence for or against the idea that Stonehenge was used as an astronomical calendar.

Now it's over to you!

What do you think? Could Stonehenge have been used to track astronomical events such as the sunrise and sunset, eclipses or the passing of the year?

Talk to your partner about what you think, and the evidence that makes you think this.

Does your partner agree with your ideas?



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