Activity 1: Question sheet **Student Activity**

Function

Charles II commissioned the Royal Observatory to solve a problem that had been plaguing navigators at the time- the longitude problem.

How did early sailors calculate their latitude and longitude?

Latitude- By measuring the angle between the horizon and Polaris, the north star. Or by measuring with angle between the horizon and the midday sun.

Longitude- 15 degrees of longitude is equivalent to a difference in time of one hour. Sailors would attempt to calculate the time difference between their current position and a fixed set off position.

Why was it important to Charles II that the longitude problem was solved?

Travelling across the sea was important for trade. Without knowing precise location, ships would often take longer than necessary to reach their destination. This was expensive, and an inefficient use of time and resources. It was also dangerous for sailors. Finding a reliable method of calculating a ship's location would improve efficiency, be lucrative, and solidify Britain's position at the time as a powerful nation, and so was important to the King.

Location

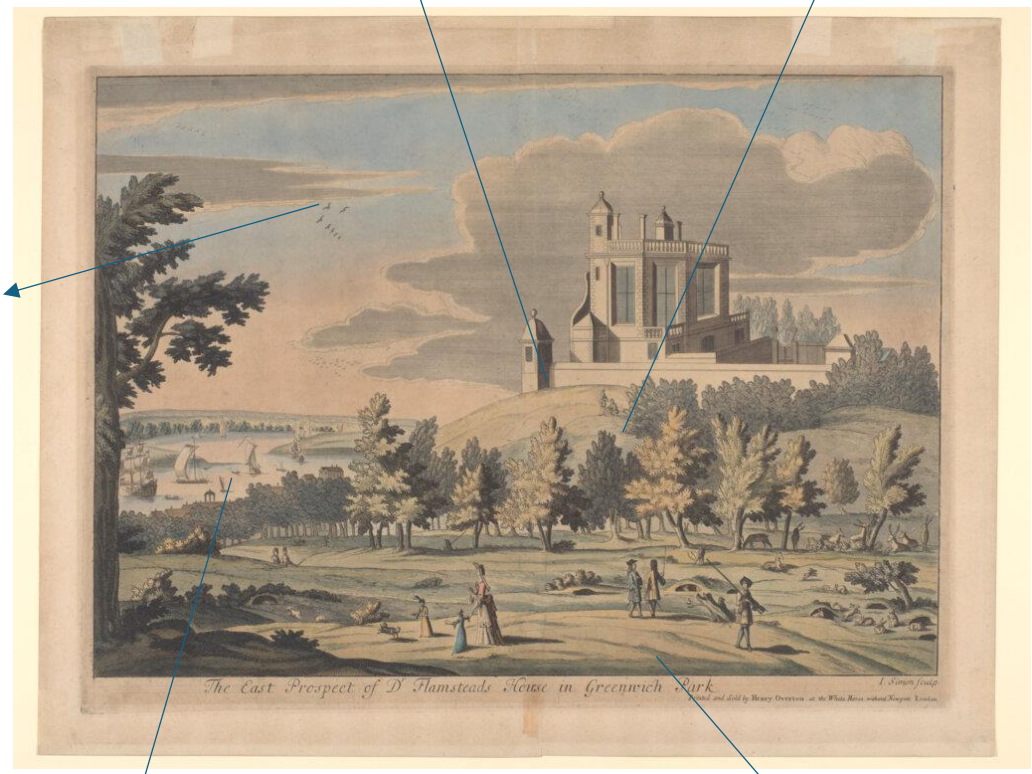
Christopher Wren suggested that the site of the old Greenwich castle would be suitable for the observatory.

The image below, *The East Prospect of Dr Flamsteads [Flamsteed's] House in Greenwich Park*, c. 1720, shows a view of Flamsteed House overlooking the Thames. On the image, label some of the features of the site that suggest it was suitable for an observatory.

Built on the site of the old Greenwich castle- land was already owned by the King

On a hill- no buildings or trees blocking view of the sky

No smoke or pollution to adversely affect observing



Close to the river- easily accessible by boat

In London

People

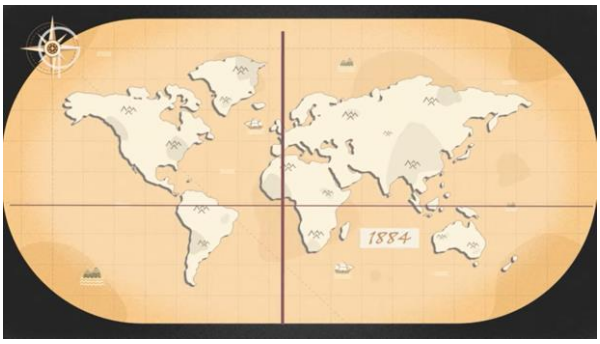
The first Astronomer Royal resided in Greenwich for 44 years, during which time he accurately mapped over 3000 stars.

What was the name of the first Astronomer Royal and in what year was he appointed? John Flamsteed, 1675
Why were his works unused by sailors? They were very technical and could not be understood by sailors

In the late 18th century, the Observatory was under the leadership of fifth Astronomer Royal, Nevil Maskelyne. In 1767, the first *Nautical Almanac* was published.

Name another invention that helped sailors determine their longitude Sea clocks/chronometers Observatory's time ball dropping at 1pm allowed sailors to set their clocks

Importance



In 1884, the meridian line at the Royal Observatory Greenwich was chosen to be the Prime Meridian of the world.

What is the Prime Meridian? A meridian is an imaginary line running from north to south used as a reference line for astronomical observations. The prime meridian is the meridian chosen to be zero degrees longitude for common reference, and separates east from west.
List three reasons Greenwich was considered an important place for time and longitude: 1. Every year since 1767 the Royal Observatory published a Nautical Almanac- which included a series of tables predicting the position of the Sun, Moon and stars throughout the year. This allowed many sailors to work out their position from sea **2.** From 1852 the Observatory was sending time signals around the country via telegraph wires **3.** Nearly two thirds of the world's ships at the time were already using navigation charts based on the Greenwich meridian

Beyond Time and Longitude

Many other astronomers have watched the skies from the Royal Observatory, including Annie and Edward Maunder who took daily photographs of the sun, and Thomas Lewis who observed double stars.

What is the Royal Observatory used for today?
The Royal Observatory is a museum with a focus on sharing the history of the site and engaging the public in astronomy.

Is the Royal Observatory as influential today as it was during the restoration period?
Yes- The Royal Observatory is a museum with daily visitors who are educated about time and space. The historic prime meridian is located in the Observatory and the prime meridian of the world is located in Greenwich, which is still used for defining Coordinated Universal Time (UTC). The red time ball drops at 1pm every day and many people visit to watch it. It is being used in the GCSE History curriculum.

No- Modern timekeeping technology means the Royal Observatory is no longer relied upon for day-to-day timekeeping. The Astronomer Royal no longer lives and works on the site.

Bonys Question- Design and Structure

To the right is a 17th century engraving of the Royal Observatory's star chamber (now called the Octagon Room).

What features of this room make it suitable or unsuitable for observing the night sky?

Suitable- Large windows and south facing views were good for observing. High ceilings allowed for large instruments to be fitted

Unsuitable- None of the walls aligned with a meridian, which was not good for observing.