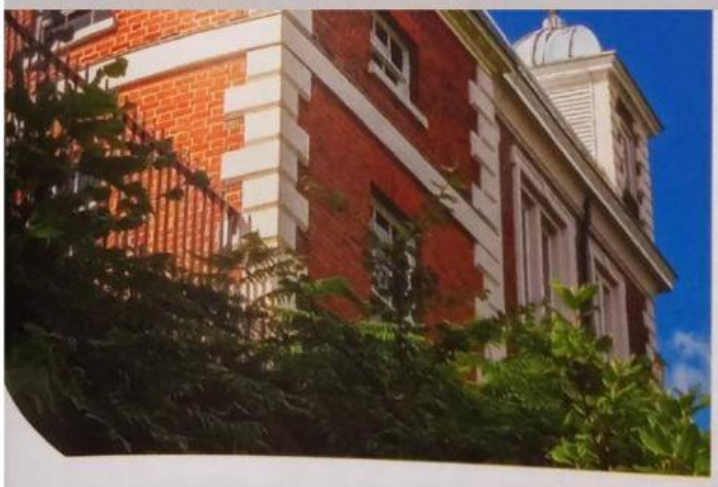
In London's Greenwich Park, next to the Thames, you'll find the Royal Observatory, Greenwich, a building which has an important place in the history of astronomical research. It is best known for marking the location of the prime meridian, a line that runs from the North Pole to the South Pole.

The observatory was commissioned by King Charles II and the building was completed in 1676. Designed by Sir Christopher Wren, it was the first scientific research facility built in Britain. The first director of the observatory was John Flamsteed and the first building was named after him. Flamsteed was in charge of studying and mapping the stars, mainly so they could be used by sailors to avoid accidents at sea. In 1957, scientific work was moved to a different location; since 1960, the Greenwich site has been used as a museum.



Visitors to the museum can see a metal line on the ground which shows the path of the prime meridian. Between the years 1848 and 1972, all the world's major countries started using time zones which were based on Greenwich Mean Time (GMT), which is the local time at the prime meridian. For example, people in the UK often say GMT+1 for the time zone which is one hour ahead of the UK. However, it is more common in the rest of the world to use the term Universal Time, which is written UTC+1. To help people in London set their clocks and watches a time ball was installed on the roof of the observatory, which still drops every day at exactly 1 p.m.

It is popular for visitors to take pictures of each other with one foot on either side of the prime meridian line—that is, with one foot in the east and the other foot in the west. Since 1999, a green laser has shone across the London night sky, following the prime meridian north across the city. If you continued the line south, it would pass through the UK, France, Spain, Algeria, Mali, Burkina Faso, Togo, Ghana and end in Antarctica.

1. What happened to the observatory in 1960?
   A. It was closed to the public.
   B. It became a place for scientific work.
   C. It was used to help prevent accidents.
   D. It was turned into a museum.

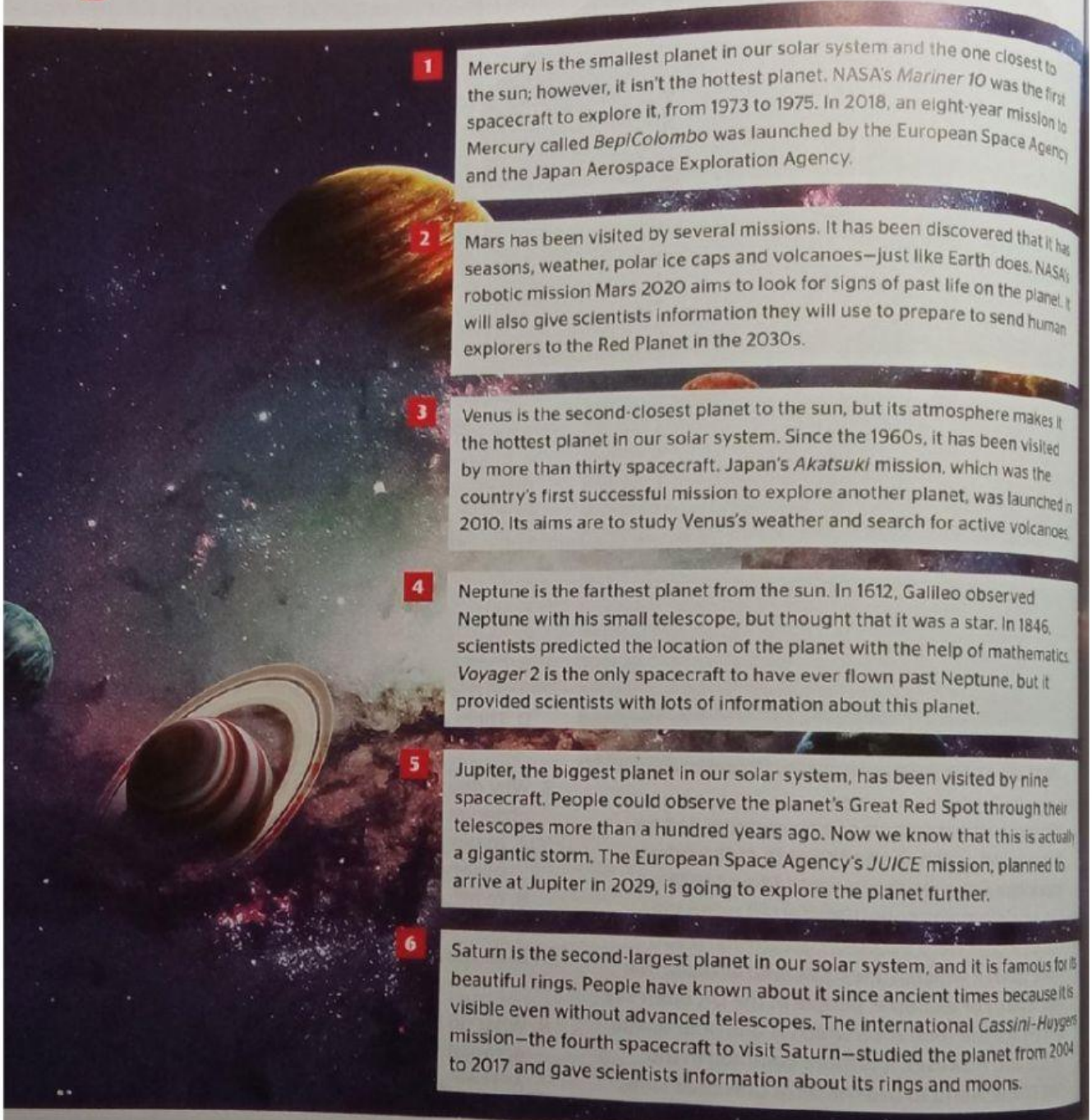
2. What is the time difference between GMT and UTC
   A. GMT is one hour ahead.
   B. GMT is one hour behind.
   C. UTC is one hour behind.
   D. There is no difference.

3. Why does a ball drop every day on top of the observatory?
   A. to remind people of the history of the observatory
   B. to help people know the correct time
   C. to remind people to eat lunch
   D. to show people why GMT is important

4. What do the countries mentioned in the last paragraph have in common?
   A. They are considered part of the east and the west.
   B. They are lit by a green laser.
   C. They all share the prime meridian line.
   D. They are in the GMT+1 time zone.

5. What is the significance of the green laser light shining across London?
   A. It represents the prime meridian line.
   B. It reminds people of the presence of the observatory.
   C. It helps people determine their location.
   D. It leads people to the observatory from wherever they are in the city.

B Read the texts below. Match choices (A-H) to (1-6). There are two choices you do not need to use.



1 Mercury is the smallest planet in our solar system and the one closest to the sun; however, it isn't the hottest planet. NASA's *Mariner 10* was the first spacecraft to explore it, from 1973 to 1975. In 2018, an eight-year mission to Mercury called *BepiColombo* was launched by the European Space Agency and the Japan Aerospace Exploration Agency.

2 Mars has been visited by several missions. It has been discovered that it has seasons, weather, polar ice caps and volcanoes—just like Earth does. NASA's robotic mission Mars 2020 aims to look for signs of past life on the planet. It will also give scientists information they will use to prepare to send human explorers to the Red Planet in the 2030s.

3 Venus is the second-closest planet to the sun, but its atmosphere makes it the hottest planet in our solar system. Since the 1960s, it has been visited by more than thirty spacecraft. Japan's *Akatsuki* mission, which was the country's first successful mission to explore another planet, was launched in 2010. Its aims are to study Venus's weather and search for active volcanoes.

4 Neptune is the farthest planet from the sun. In 1612, Galileo observed Neptune with his small telescope, but thought that it was a star. In 1846, scientists predicted the location of the planet with the help of mathematics. *Voyager* 2 is the only spacecraft to have ever flown past Neptune, but it provided scientists with lots of information about this planet.

5 Jupiter, the biggest planet in our solar system, has been visited by nine spacecraft. People could observe the planet's Great Red Spot through their telescopes more than a hundred years ago. Now we know that this is actually a gigantic storm. The European Space Agency's *JUICE* mission, planned to arrive at Jupiter in 2029, is going to explore the planet further.

6 Saturn is the second-largest planet in our solar system, and it is famous for its beautiful rings. People have known about it since ancient times because it is visible even without advanced telescopes. The international *Cassini-Huygens* mission—the fourth spacecraft to visit Saturn—studied the planet from 2004 to 2017 and gave scientists information about its rings and moons.

Which planet _____?

A. was first identified by people thousands of years ago ☐
B. got its rings because of a volcanic eruption ☐
C. has been approached by one mission only ☐
D. shares some similarities with our planet ☐
E. is characterised by an extreme weather phenomenon ☐
F. has the highest temperatures ☐
G. was first explored by a Japanese mission ☐
H. is being explored by a joint mission of two space agencies ☐