



Knowledge Organiser - Space



Key vocabulary



astronomy - the study of everything in the universe beyond Earth's atmosphere

observation - the act of carefully watching, noticing or listening to something to gather information.

theory - a well supported set of ideas, principles or proposed explanations that explains factors, events or how something works.

heliocentric - a model that places the sun at the centre of the solar system

geocentric - a model that places the Earth at the centre of the solar system

telescope - a tubular optical or electronic instruments used to make distant objects appear larger, clearer and nearer

cold war - a decades long period of intense political and economic rivalry between the USA and USSR (Soviet Union).

space race - a competition between the USA and USSR to see who would achieve superior spaceflight capabilities and demonstrate technological supremacy

satellite - any object, natural or man-made, that moves in a repeating path around a larger object in space.

cosmonaut - a person trained, certified and launched into space by the Russian (or former Soviet) space program.

astronaut - a person trained, certified and deployed to travel into outer space.

launch - to propel an object forward with force

orbit - the curved, repeating path that an object in space takes around another object

segregation - keeping different groups of people apart from one another

discrimination - treating a person or a group unfairly or differently because of who they are or their personal characteristics.

space centre - a facility dedicated to space research, spacecraft manufacturing, flight operations and rocket launches



Greek Astronomers

Before technology was developed, ancient Greek astronomers had early ideas about the universe. Galileo helped to revolutionise space and astronomy by using an improved telescope to make groundbreaking observations of the night sky: the moons surface had mountains and craters, four large moons orbited Jupiter and Venus goes through phases like the moon. His observations strongly supported Copernicus's theory that the sun is at the centre of our solar system.



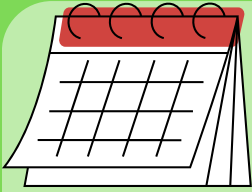
Cold War/ Space Race

After World War 2, tensions between the USA and USSR led to the Cold war - a period of rivalry between them which had no direct fighting. The Space Race was a rivalry where both countries competed to achieve major space milestones. This was fuelled even more when the USSR launched Sputnik into orbit.



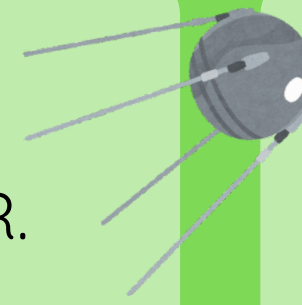
Moon Landing

On the 16th July 1969, Apollo 11 mission launched with Commander Neil Armstrong, Lunar Module Pilot Buzz Aldrin and Command Module Pilot Michael Collins. Four days later (20th July) they landed on the surface of the Sea of Tranquility with only seconds of fuel to spare. Neil Armstrong became the first man to step onto the lunar surface famously stating, 'That's one small step for man, one giant leap for mankind'.



Key dates

- 4th October 1957** - Launch of Sputnik 1, the first artificial satellite by the USSR.
- 3rd November 1957** - Sputnik 2 carried Laika, the first animal to orbit Earth.
- 12th April 1961** - Soviet Cosmonaut Yuri Gagarin became the first human in space.
- 16th June 1963** - Valentina Tereshkova became the first woman in space.
- 20th July 1969** - American astronaut Neil Armstrong became the first human to walk on the moon during the Apollo 11 mission.
- 1991** - Helen Sharman became the first British astronaut in space.
- 2000** - The first crew arrived on the ISS.
- 2015** - Tim Peake became the first British ESA astronaut to visit the ISS.
- 2023** - The ESA launched Jupiter Icy Moons Explorer, which is expected to reach Jupiter by 2031.
- 2026** - Four astronauts flew around the moon - the furthest anyone has travelled from Earth.



Significant Women in the Space Race

During the mid 20th century, women and black people faced discrimination, segregations and limited opportunities, including within NASA. Black women such as Katherine Johnson, Dorothy Vaughn, Mary Jackson and Christine Darden made significant contributions in America's early space travel despite these barriers.



Space Centres and Space Programmes

Space centres are specialised bases where scientists, engineers and astronauts design, build and launch rockets to explore our universe. America's most famous space centre is Kennedy Space Centre, in Florida, which is led by NASA. Russia's space centre is Baikonur Cosmodrome, located in Kazakhstan. In Asia, there is Tanegashima Space Center (JAXA) in Japan and Satish Dhawan Space Centre (ISRO) in Southern India. The European Space Agency has a location in French Guiana. Countries like the USA, Russia and China have major space programmes.



Key questions

1. **How did we learn about space before space exploration?**
2. **What was the 'Space Race' and which nations were involved?**
3. **What is the history of space travel and understanding?**
4. **What happened during the first Moon landing and who was involved?**
5. **How were the attitudes towards women, especially black women, different to those of a white male when space travel was first occurring?**
6. **Where are the space centres in the world and why are they located there?**
7. **Where are the world's major space programmes?**

