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Stargazers

The Solar System

The Solar System is made up of a collection of planets, their moons and smaller objects such as dwarf planets, asteroids, meteoroids and comets that orbit the Sun. There are eight planets in the Solar System: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

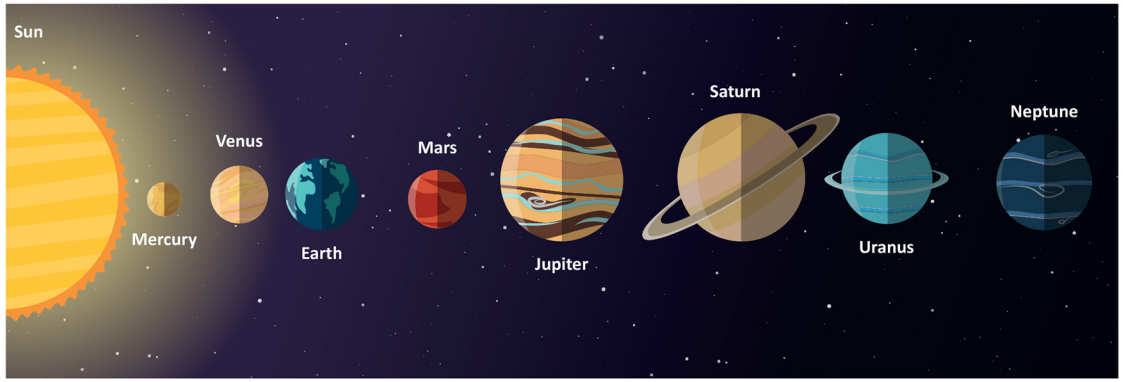
The four planets closest to the Sun are called terrestrial planets and are made up almost entirely of rock. These are Mercury, Venus, Earth and Mars. The four planets furthest away from the Sun are called Jovian planets and are mostly made up of gases, such as hydrogen and helium. These are Jupiter, Saturn, Uranus and Neptune.

Night and day

Night and day occurs because the Earth rotates on its axis. As the Earth rotates, the part of the planet that faces the Sun experiences light and daytime. The part of the Earth that faces away from the Sun experiences darkness and night-time. When viewed from above the North Pole, the Earth rotates anti-clockwise, which is why the Sun always rises in the east and sets in the west.

The Sun

The Sun is a star at the centre of the Solar System. The diameter of the Sun is about 1.4 million km. Its surface temperature is about 5500°C and its core temperature is about 15.5 million°C. The Sun is important because it provides light, heat and energy so that plants and animals, including humans, can live on Earth.



Gravity

Gravity is a force that pulls objects toward each other. On Earth, gravity pulls all objects towards its centre and keeps everything on the ground. Gravity also keeps the Moon in orbit around the Earth and the planets in orbit around the Sun.

Isaac Newton (1643–1727)

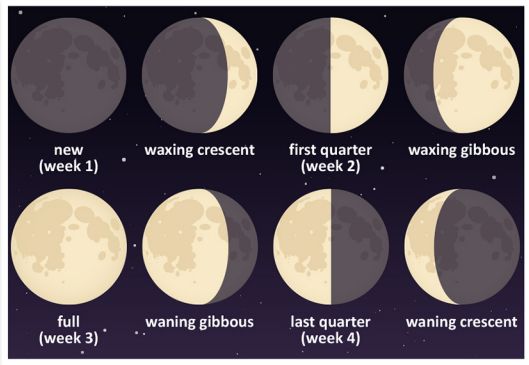
Issac Newton formed his theory of gravity when he watched an apple fall from a tree. A newton (N) is a unit of measurement that is used to measure the pull of gravity.

Galileo Galilei (1564–1642)

Galileo Galilei was an Italian scientist and inventor who proved that the Earth orbits the Sun. In 1609, Galileo invented a telescope that he used to observe sunspots that appeared to move across the Sun's surface. He also observed the craters and mountains on the Moon and discovered the four moons orbiting Jupiter.

The Moon

The Moon is a natural satellite that is 384,400km away from Earth. It orbits the Earth every 27 days. The surface of the Moon is covered with craters. There is no atmosphere or life on the Moon. The Moon reflects the light of the Sun and looks different every day, depending on how much of the reflected surface is seen from Earth. These differences are known as phases of the Moon.



Phases of the Moon

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Apollo 11 timeline

The first Moon landing took place on the 21st July 1969.

16th July	Apollo 11 takes off from the launch pad at Kennedy Space Centre, Florida. It is manned by Neil Armstrong, Buzz Aldrin and Michael Collins.
18th July	Armstrong and Aldrin check the *Eagle*, the lunar landing module, to make sure everything is ready for the Moon landing.
19th July	Apollo 11 begins to orbit the Moon.
20th July	**5.44pm** The *Eagle*, manned by Armstrong and Aldrin, undocks from the command module *Columbia* and descends towards the Moon's surface. Collins stays onboard *Columbia*. **8.18pm** Armstrong lands the *Eagle* on the surface of the Moon.
21st July	**2.56am** Armstrong steps onto the surface of the Moon and says, *'That's one small step for man, one giant leap for mankind.'* **3.15am** Aldrin steps onto the surface of the Moon. The astronauts lay commemorative plaques, plant an American flag, collect samples and carry out experiments. **5.11am** Armstrong and Aldrin climb back into the *Eagle*. **5.54pm** The *Eagle* lifts off from the surface of the Moon. **9.35pm** The *Eagle* docks back onto the command module *Columbia*.
22nd July	The astronauts begin their return journey to Earth.
24th July	**4.50pm** Apollo 11 splashes down into the Pacific Ocean.

All times are in Greenwich Mean Time (GMT), which is the time in the UK.

The Space Race

The Space Race was a competition between the Soviet Union (USSR) and the United States that took place in the 1950s and 1960s when the two countries were involved in a war called the Cold War. The main aim of the Space Race was to go into space and reach the Moon first. President of the United States, John F Kennedy, famously declared, *'We choose to go to the Moon!'* By the end of the decade, both the USSR and the USA had invented the technology to make it possible. There were many exciting firsts during the Space Race.

First satellite in space (USSR)
Sputnik 1
October 1957

First animal in space (USSR)
Laika the dog
November 1957

First human in space (USSR)
Yuri Gagarin
April 1961

First spacewalk (USSR)
Alexey Leonov
March 1965

First manned spacecraft to orbit the Moon (USA)
Apollo 8
December 1968

First person to step on the Moon (USA)
Neil Armstrong
July 1969

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Glossary

asteroid	A rock that orbits the Sun.
astronomer	A person who makes observations about and studies space.
atmosphere	A mixture of gases that surround a planet.
axis	The imaginary line on which a planet rotates.
comet	A frozen mass of dust and gas orbiting the Sun.
crater	A large hole made when an object hits a surface with force.
dwarf planet	An object orbiting the Sun that is larger than a comet, meteoroid or asteroid but not as big as a planet.
lunar	Relating to the Moon.
meteoroid	A rock that orbits the Sun, which is smaller than an asteroid.
orbit	A curved, invisible path that a planet, asteroid, meteoroid or comet takes as it goes around something else such as the Sun.
planet	An almost spherical object made of rock, metal and gas orbiting a star.
rotate	To turn around a fixed point.
satellite	A man-made machine or a natural object that orbits a body in space and sends signals to and from Earth.
star	A huge, bright ball of burning gas that is held together by gravity.
universe	All of space and everything in it including stars, planets and galaxies.

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