

Knowledge Organiser
Subject: Science Unit: Earth and Space

Overview:

During this sequence of learning, pupils will describe the movement of the Earth and other planets relative to the sun and the solar system, describe the movement of the moon, describe the Sun, Earth and Moon as spherical bodies and use the idea of the Earth's rotation to explain day and night.

What should I already know?

- Days are longer in the summer and shorter in winter.
- Weather changes through the year, getting hotter in the summer and colder in the winter.
- Earth orbits the Sun with one orbit constituting a year of 365/366 days.
- Light is a form of energy.
- We need light to see things and that darkness is the absence of light.
- Light travels in straight lines.
- Everything that we can see is either a light source or something that is reflecting light from a light source into our eyes.
- The Sun is a light source, but the Moon is not and is merely reflecting light from the Sun.
- Many light sources give off light and heat.
- The Sun gives off light and heat when hydrogen turns into helium.


What will I know by the end of the unit?

- The universe comprises all matter and space in existence.
- A celestial body is a large object in the universe.
- A star is an exceptionally hot ball of gas, originally made from hydrogen and helium.
- The Sun is a star.
- A planet (e.g Earth) is defined as a spherical celestial body that orbits a star.
- It was once thought that everything orbited the Earth, but scientists like Copernicus and Galileo used telescopes and measurement to show that the Earth orbited the Sun.
- There are eight major planets in our solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.

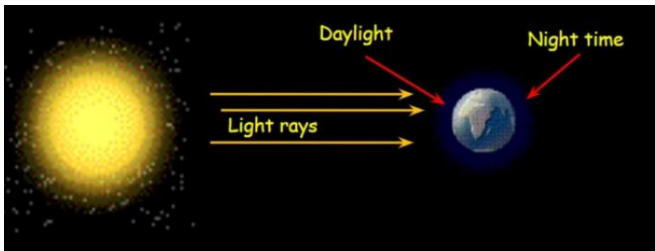
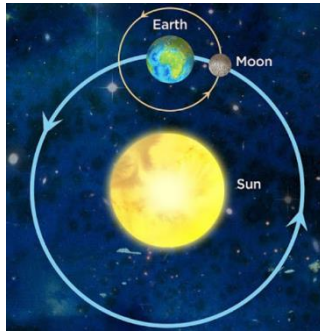


- Jupiter is the largest planet and Mercury is the smallest.
- There are also Dwarf Planets within the solar system - Pluto is one of these.

Vocabulary:

planet	An astronomical object that orbits a star and does not emit its own light.
satellite	An object either natural (moon) or man-made that orbits a planet. Man-made satellites are sent into space to gather information.
sphere	An object shaped like a ball.
solar system	A star with objects such as planets revolving around it.
eclipse	A complete or partial hiding of the Sun caused by the moon passing between the sun and Earth.
star	A burning mass of gas that makes heat and light energy e.g. the sun.
universe	All of space and everything in it including planets, stars and galaxies.
constellation	A group of stars that form a pattern when viewed from Earth. 
axis	A straight line about which a body rotates.
celestial body	A natural body that exists outside of Earth's atmosphere.
moon	A large, natural object that orbits or travels around Earth.

- The universe is utterly vast and that our solar system makes up a tiny fraction of the universe.
- A satellite orbits a planet and moons are natural satellites.
- The Moon orbits the Earth roughly every 28 days.
- As the Moon orbits the Sun and Earth, different parts of it are lit up by the Sun, which is why we see a different shape lit up on the Moon as the lunar cycle progresses.
- Humans have sent man-made satellites into orbit that assist with telecommunication.
- All the planets in the solar system orbit the Sun and the further away they are from the Sun, the longer their orbit.
- The Earth spins around an imaginary line through its centre called an axis and this axis is tilted relative to the Earth's orbit. Earth is constantly spinning.
- Night and day are the result of the Earth rotating on its axis as it takes 24 hours to rotate once. When a point on Earth is facing the sun, it is daytime and when it is facing away from the sun it is night time.



- The tilt of the Earth towards and away from the Sun's light as the Earth orbits the Sun leads to the seasons as during winter the light is spread over a wider area.
- A solar eclipse occurs when the Moon is between the Sun and the Earth, casting a shadow on the Earth; a lunar eclipse occurs when the Earth is between the Sun and the Moon, casting a shadow on the Moon.
- It is not safe to look directly at the sun even when wearing dark glasses.

rotating

The act of turning about an axis.

solar energy

Light, heat or other forms of energy given off by the sun.

telescope

An instrument that allows people to see distant objects e.g. stars.

orbit

The curved path of a planet, satellite or spacecraft around an object such as the sun.

