



# EARTH and SPACE

## KNOWLEDGE ORGANISER



Word	Definition
Planet	A large body in outer space that circles around the sun or another star.
Rotate	To spin. E.g. Earth rotates on its own axis.
galaxy	A galaxy is a group of millions of stars held together by gravity, like the Milky Way.
Movement	To change in position or location.
Night	The hours of darkness between sunset and dawn.
Solar System	Our sun, its eight planets and their moons, and all other bodies that travel around the Sun, or any system that include a star and all of the matter which orbits that star, including planets and moons.
Orbit	The curved path taken by an object that moves round another object like a planet around the Sun.
Spherical	Shaped like a sphere.
Moon	A natural satellite which orbits Earth or other planets.
Season	One of the four parts of the year; spring, summer, autumn and winter.
Model universe	Heliocentric and geocentric are two explanations of the arrangement of the universe, including the solar system.
Axis	A real or imaginary line through the centre of an object, around which the object turns.
Earth	The fifth largest planet in our solar system and the third in distance from the sun.
International space station (ISS)	The International space station is a large spacecraft in orbit around Earth.

The Sun, Earth and Moon – spherical bodies  
 The Earth, Moon and Sun are all spherical. However, it is only in the last 50 years or so that we have photographic evidence of this. Astronauts who have travelled into space have been able to see that the Earth, Moon and Sun are not flat.



### The size of the Earth, Sun and Moon.

In the very centre of our solar system is the Sun, which is about 1.3 million times as big as a planet. Earth is the third closest planet to the Sun and is the fifth biggest planet in the solar system.

### How far away are the planets from each other?

Mnemonic to help remember the planets:

**M**y **V**ery **E**asy **M**ethod, **J**ust **S**peeds **U**p **N**aming **P**lanets.

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.



### The movement of the Earth and other planets.

The planets are (from closest to furthest away from the Sun) Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Jupiter is the largest planet and Mercury is the smallest.

Earth is the only known planet in the Solar System where there are living things. The planets closer to the Sun are thought to be too hot, whilst some of those further away are too cold.

You could fit about 1,321 Earths inside Jupiter. You could fit 1.3 million Earths into the Sun

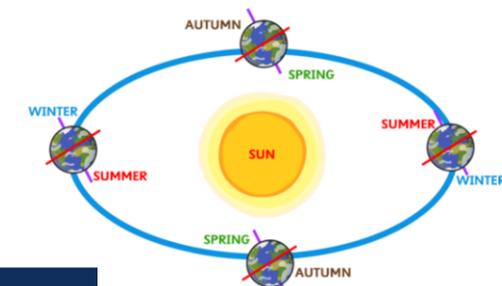
### Earth's rotation.



- The Sun is a star: a huge ball of hot gas that gives off light & heat. The Earth (and all of the planets in the Solar System) orbit the Sun.
- It takes the Earth just over 365 days to make one complete orbit around the Sun – this is one year. The Earth and other planets are held in place around the Sun by gravity – the same force that keeps you on the Earth!
- The Earth is always spinning around. When a point on Earth is facing the Sun, it is daytime. When facing away, it is nighttime. It takes 24 hours for the Earth to complete a spin (one day).
- Some objects orbit around the planets. These are called moons. The Earth has one moon (just called The Moon). The Moon is much smaller than the Earth, and takes one full day to complete an orbit around the Earth.

### The Sun at different times of the year.

The time of sunrise and sunset depends on what time of year it is. The Sun rises earlier and sets later in summer, making the days longer than in winter. This is because as well as the Earth rotating on its axis, it also orbits the Sun. It takes the Earth 365.25 days to orbit the Sun completely. Because of the tilt of the Earth's axis, some parts of the Earth will be leaning more towards the Sun at certain times of the year than others and vice versa.



### Year 5 Progression

Can they identify and explain the movement of the Earth and other planets relative to the sun in the solar system?

Can they explain how seasons and the associated weather is created?

Can they describe and explain the movement of the Moon relative to the Earth?

Can they describe the sun, earth and moon as approximately spherical bodies?

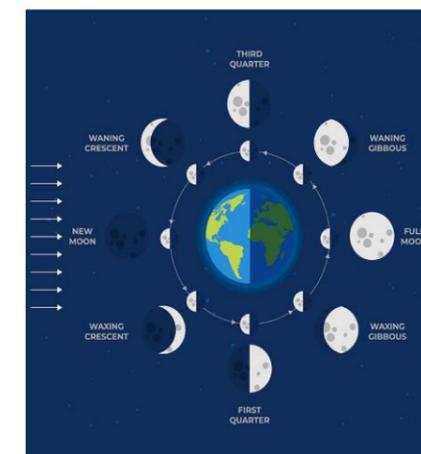
Can they use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky?

Challenge:

Can they compare the time of day at different places on the earth? Can they create shadow clocks?

Can they begin to understand how older civilisations used the sun to create astronomical clocks, e.g. Stonehenge?

Can they explore the work of some scientists? (Ptolemy, Alhazen, Copernicus)



### The movement of the moon

The moon takes 27 days (and 8 hours) to orbit the Earth. The Moon has an elliptical orbit rather than a circular orbit., which means it orbits the Earth in an egg shape.

### The Planets

Mercury



Venus



Earth



Mars



Jupiter



Saturn



Uranus



Neptune

