

Willerby Carr Lane Primary School - Science

Topic: Earth and Space

Year: 5

Strand: Physics

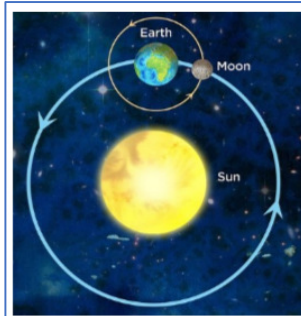
What should I already know?

- We have four seasons (autumn, winter, spring and summer).
- Know that a shadow is caused when an object blocks light from passing through it.
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- The properties of a sphere
- That the moon is not a source of light

What will I know by the end of the unit?

What causes day and night?	<ul style="list-style-type: none"> • The Earth rotates on its axis anti-clockwise and makes a complete rotation over 24 hours (a day). • This makes it appear as the Sun moves through the sky but the Earth's rotation causes day and night. • Different parts of the Earth experience daylight at different times - this means that it is morning, afternoon and night in different places. This is also the reason why we have time zones. • Because of the Earth's tilt, the poles experience 24 hours of sunlight in the summer, and very few hours of sunlight in the winter. • As the Earth rotates, shadows that are formed change in size and orientation.
How long does it take the Earth to orbit the sun?	<ul style="list-style-type: none"> • The Earth takes 365 and a quarter days to orbit the Sun. • Because of the extra quarter day it takes to orbit the Sun, every four years on Earth is a leap year!
What causes the seasons?	<ul style="list-style-type: none"> • It is the Earth's tilt that causes the seasons.
What are the phases of the moon?	<ul style="list-style-type: none"> • The Moon orbits the Earth anticlockwise and takes approximately 28 days. • The Moon spins once on its axis every time it orbits Earth. This means that we only see one side of the Moon. • The Moon has different phases depending on where it is in its orbit. • The Moon's gravity causes high and low tides.
What is the Solar System?	<ul style="list-style-type: none"> • There are 8 planets in our Solar System (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune). Pluto is a dwarf planet. • They all orbit the Sun, which is a star, and they all have moons. • Theories have changed over the years, and early astronomers believed that the earth

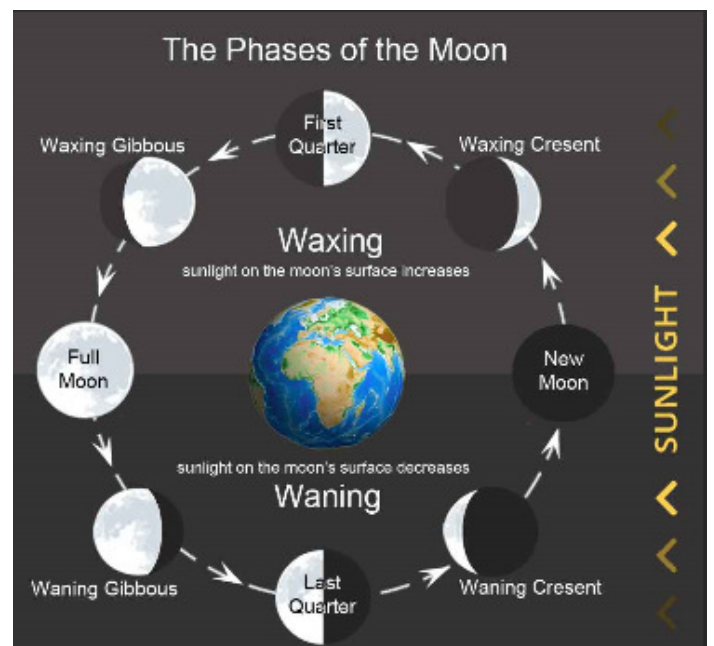
- was at the centre of the solar system. Consider the work of astronomers such as Ptolemy, Alhazen, Copernicus.
- The first four planets are relatively small and rocky, while the four outer planets are gas giants (Jupiter and Saturn) or ice giants (Uranus and Neptune).
 - There are also asteroids, meteoroids and comets in the Solar System.
 - The solar systems is in a galaxy called the Milky Way.
 - The galaxy is in the universe.



The Sun, Earth and Moon are approximately **spherical**.

The Earth **orbits** the Sun.

The Moon **orbits** Earth.



Vocabulary	
asteroid	a rock that orbits the Sun in a belt between Mars and Jupiter axis an imaginary line through the middle of something
astronomer	an expert in astronomy
axis	a straight line about which a body rotates
comet	a bright object with a long tail that travels around the Sun
galaxy	an extremely large group of stars and planets. Our galaxy is called the Milky Way.
Geocentric	Where people believed the earth was at the centre of the solar system
gravity	the force which causes things to drop to the ground
Heliocentric	Representing the sun as the centre of the solar system, the modern view of the solar system
leap year	a year which has 366 days. The extra day is the 29th February. There is a leap year every four years
meteorite	a rock from outer space that has landed on Earth

moon	The Moon is an astronomical body that orbits the Earth as its only permanent natural satellite
orbit	the curved path in space that is followed by an object going round and round a planet, moon, or star
planet	a large, round object in space that moves around a star
satellite	A celestial body or artificial body that orbits the earth or another planet
shadow	a dark shape on a surface that is made when something stands between a light and the surface
Solar System	the Sun and all the planets that go round it
sphere	an object that is round in shape like a ball spin turns quickly around a central point
star	a large ball of burning gas in space
sun	The star round which planets orbit
time zones	one of the areas into which the world is divided where the time is calculated as being a particular number of hours behind or ahead of GMT (Greenwich Mean Time)
universe	the whole of space and all the stars, planets, and other forms of matter and energy in it

Investigate!

- How do we know the earth is spherical?
- Mark the length of shadows over a day
- Keep a Moon diary over the course of a month - what do you notice?
- Compare the time of day at different places on Earth.

Common misconceptions

Some children may think:

- the Earth is flat
- the Sun is a planet
- the Sun rotates around the Earth
- the Sun moves across the sky during the day
- the Sun rises in the morning and sets in the evening
- the Moon appears only at night
- night is caused by the Moon getting in the way of the Sun or the Sun moving further away from the Earth.

