

16. Universe



Bitesize



YouTube



Galaxy: Collection of stars held together by gravity. Our galaxy is called the Milky Way.

Light year: The distance light travels in a year (over 9 million, million kilometres).

Stars: Bodies which give out light, and which may have a solar system of planets.

Orbit: Path taken by a satellite, planet or star moving around a larger body. Earth completes one orbit of the Sun every year.

Exoplanet: Planet that orbits a star outside our solar system.

The Moon as seen from Earth



Phases of the Moon

It takes the Moon 28 days to make a complete orbit of the Earth.

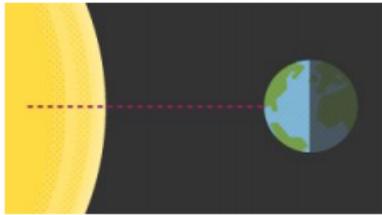
As it orbits, we see the Moon lit from different angles. This is why we see phases of the Moon.

Sometimes the Moon looks like a full circle. That is called a 'full Moon'.

At other times we see a crescent shaped Moon, because we can only see the edge of the part that is lit by the Sun.

Remember that we can only see the part of the Moon that reflects the Sun's light. How much of that we can see depends upon the position of the Moon in its orbit

Day and night

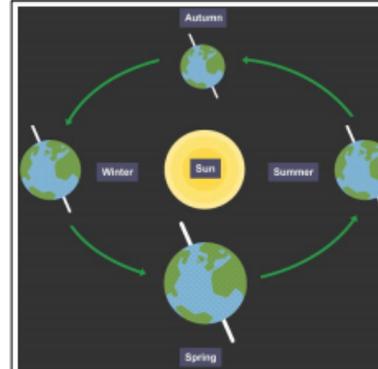


The Sun lights up one half of the Earth, and the other half is in shadow. As the Earth spins we move from shadow to light and back to shadow and so on. It is daytime in the UK when our part of the planet is lit by the Sun. And it is night in the UK when our part of the planet is facing away from the Sun.

Seasons

We get different seasons (winter, spring, summer and autumn) because the Earth's axis is tilted. This is how it works:

- it is summer in the UK when the Northern Hemisphere is tilted towards the Sun
- it is winter in the UK when the northern hemisphere is tilted away from the Sun



Securing

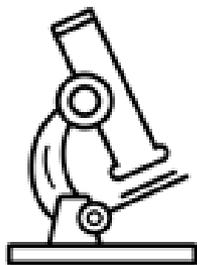
To be securing in this topic you need to be able to:

- Describe the appearance of planets or moons from diagrams showing their position in relation to the Earth and Sun.
- Explain why places on the Earth experience different daylight hours and amounts of sunlight during the year.
- Describe how space exploration and observations of stars are affected by the scale of the universe.
- Explain the choice of particular units for measuring distance.

Mastering

To be mastering in this topic you need to be able to:

- Predict patterns in day length, the Sun's intensity or an object's shadow at different latitudes.
- Make deductions from observation data of planets, stars and galaxies.
- Compare explanations from different periods in history about the motion of objects and structure of the Universe.



Learning Journey

Physics: Universe



KNOW IT

- [I know how different objects in the universe compare in size](#)
- [I know about satellites and how they are used based on their orbit and distance from the sun.](#)
- [I know about the relationship between orbit time and distance from the sun.](#)
- [I know about what causes daytime and nighttime as well as the seasons](#)
- [I know why the Moon appears as different shapes over the course of 1 month](#)
- [I can describe information about our galaxy and what is beyond.](#)
- [I can explain how and why our knowledge of our solar system has changed over time.](#)



PROVE IT

- End of unit test
- DIRT activity – Theories about our universe



LINK IT

Remember, you will have covered some of this knowledge in your study of the Solar System in Primary School.



SAY IT

VOYABULARY	DEFINITION
Galaxy	A large cluster of millions of stars and their associated planetary systems.
Light	Electromagnetic wave from a source can be detected by the eye allowing us to see. Speed 300 000 000 m/s
Year	365 days – the time it takes for Earth to orbit the sun once.
Star	A very hot mass in space where nuclear fusion happens. This makes and radiates its own light and heat. The sun is our nearest star.
Orbit	The path taken by one heavenly body around another in space.
Exoplanet	Planet in a solar system outside our own (orbiting a different star)
Planet	A large body which orbits a star. There are eight in our solar system.
Venus	The second planet from the Sun.
Mars	The fourth planet from the Sun.
Jupiter	The fifth planet from the Sun.
Sun	The star in the middle of our solar system.
Universe	The whole of space and all the matter it contains.