



Lesson 1 – Night Sky

1. Name two objects in the night sky
2. Why might humans have difficulty looking at the night sky?

Lesson 2 – Solar system

1. What is at the centre of the solar system?
2. What are the planets in the solar system in order?

Lesson 3 – Meteors skills

1. What would happen to the size of a crater if a meteor was larger?

Lesson 4 – Seasons

1. What is it about the Earth that causes the seasons?
2. What changes in summer compared to the winter?

Lesson 5 – Phases of the moon

1. How long is the moon cycle?
2. What causes the moon to have different phases?

Lesson 6 – Orbits

1. What causes objects to orbit each other?
2. What is different about orbits of asteroids?

SUBJECT: Science

UNIT: Y7 Universe



Key Vocabulary

Star

An enormous ball of gases which produces large amounts of heat and light, due to nuclear fusion reactions in its core.

Planet

Planets orbit stars and can be made of solid or gaseous material.

Orbit

The path an object takes when it moves in space around a star, planet or moon

Ellipse

A shape that looks like an oval or a squashed circle

Dwarf Planets

These are too small to be considered planets

Satellites

Many artificial satellites orbit around the Sun and the planets. These are objects or machines that have intentionally been launched into orbit. Artificial satellites have many uses, including: navigation, observing Earth, monitoring weather, space telescopes, and relaying communications signals.

Solar system

The solar system is made up of the Sun (our nearest star) and the objects that orbit around it, including planets, asteroids and comets.

Our Solar System

At the centre of the solar system is the Sun – our nearest star. The Sun's enormous mass creates a strong gravitational field around it, which causes smaller objects like planets, asteroids and comets to orbit around it in *elliptical* paths. Our solar system has four terrestrial planets (made mainly from rock and metal). These are Mercury, Venus, Earth and Mars. Further from the sun we have four gas giants; Jupiter, Saturn, Uranus and Neptune.

Asteroids Between the orbits of the terrestrial planets and the gas giants, there are millions of asteroids – rocky objects that orbit the Sun and vary in size from 1km to around 1000km. Like planets, asteroids are mostly made of rock and metal and they orbit the Sun, but asteroids are much smaller than planets.

Orbits

All objects exert gravitational forces on each other, causing them to be attracted together. These forces can become very large when the objects have a high mass, like stars, planets or moons. As well as holding planets and asteroids in orbit around the Sun, these gravitational forces hold moons and satellites in orbit around planets.

Comets

Comets orbit in paths which are highly *elliptical* and occasionally make their way into the inner solar system, where the Sun's intense heat starts to melt them. This produces a large tail made of gases and dust, which can be many millions of miles long which reflects lots of the Sun's light, causing them to glow brightly.

Phases of the Moon

The Moon's appearance changes over time when viewed from Earth. Sometimes, the Moon is not easily seen in the sky and at other times it can appear as a thin *crescent*, a full circle – or somewhere in between. A *lunar month* lasts around 29.5 days and starts with a *new Moon* – when the Moon is not easily seen in the sky because the light from the Sun lands on the side of the Moon which is facing away from Earth. As the Moon moves around Earth, the illuminated section of the Moon's surface starts to face towards the Earth, and we see a thin *crescent Moon* appear.

Ambitious Vocabulary

Gravity, orbit

Day and Night

As Earth orbits the Sun, it rotates on its *axis*. Each rotation of Earth on its axis takes 24 hours. This period of time is called a *day*. As Earth rotates on its axis, the side of Earth facing towards the Sun is lit by the Sun. People living on this side of the Earth experience day. The opposite side of Earth at this point is facing away from the Sun and people living on this side experience night.

Seasons

Earth takes approximately 365 days to orbit once around the Sun. This length of time is called a year. As Earth moves through its orbit around the Sun, different parts of the planet are tilted closer or further from the Sun, because of the tilt in Earth's axis. It is the angle of the Earth's tilt that causes the **seasons**: spring, summer, autumn and winter.