Astronomy - Physics

Year 2

End Points:

- The Sun is a star at the centre of our solar system.
- There are eight planets in our solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
- Planets travel around the Sun. We call this journey an orbit.
- As the planets orbit the Sun, they also spin around. We call this rotation.
- Night and day occur due to the Earth rotating.
- The Moon orbits the Earth.
- The Moon reflects the light of the Sun.
- As the Moon's position changes, we can see different parts of it.
- A constellation is a group of stars that, when seen from Earth, form a pattern.
- People have given constellations names and have told stories that imagine how the constellations were formed.
- Astronomers have studied the stars for many years, learning from each other and making new discoveries.
- Scientists, including astronomers, study space to find out more about what lies beyond our planet.
- The International Space Station orbits earth and allows scientists to find out more about space.
- Scientists have sent a rover to Mars to look for signs of life long ago.

This unit has been included in our curriculum in addition to the National Curriculum content. It gives pupils an introduction to this fascinating branch of science, before they are required to do so by the National Curriculum in Year Five. This unit builds important understanding that scientists learn from each other to make new discoveries. This avoids pupils building a misconception that scientists discover things in a vacuum, just one day stumbling upon new knowledge, and reinforces the idea that scientists are experts who have studied the work of people who came before them. This important disciplinary knowledge will help pupils to recognise the discipline of science and the many branches that lie within it.

Pupils will be introduced to the planets of our solar system and will begin to understand orbit and rotation. They will begin to understand why there is life on earth, but not similar life on other planets. Teachers will demonstrate how light from the sun gives us day, and how the rotation of the earth gives us night. Pupils will revisit this later in Year 5. They will then study the phases of the moon, recognising that although our view of the moon changes throughout the phases, the moon itself does not change shape.

Building on their understanding of our solar system, pupils will then look beyond it at the stars and the formations they make in the sky. Pupils will learn that a long time ago, people tried to understand what they saw in the sky, by telling stories about how the stars came to be. They will learn that constellations are groups of stars in the sky, and that people have 'joined the dots' to create pictures, such as the Great Bear or the hunter Orion. In this lesson, pupils will learn

that astronomers have been studying the stars for many years and over a thousand years ago a Persian astronomer, Abd al-Rahman al-Sufi, known as Azophi, made the first known observation of a group of stars outside of our galaxy. If there is time, other early astronomers could be studied too.

Finally, pupils will learn about space exploration. They will look at the International Space Station and its importance to space exploration. Pupils will build on this knowledge in Year 5 Astronomy in Science but also when they study the Cold War and the Space Race in History in Year 6. We have included some content teaching pupils about the Mars 2020 mission which recently landed a rover on the surface of Mars to explore the geology of a large crater that scientists believe once contained water. The rover will help scientists to analyse rock and soil samples to look for signs of ancient life. Pupils will again revisit the idea that scientists build on each other's work to make progress in their understanding. When pupils come to study Astronomy in Year 5, they will bring some key prior knowledge from this unit that will support their learning.

Lesson Sequencing:

In lesson one, pupils will learn that there are eight planets in our solar system. This will be built upon in lesson two when pupils learn that the Earth travels around the Sun. Lesson three will develop this understanding of orbit by looking at how the Moon orbits the Earth. In lesson four, pupils will learn about constellations and lesson five will look at how scientists have made discoveries in space. In the assessment lesson, pupils will explain what scientists know about our solar system.

Misconceptions:

- Earth is at the centre of the solar system and other planets orbit it
- The Sun, Moon and Earth are a similar size
- Pluto is a planet
- The Sun is a planet
- Earth is flat
- The Sun orbits the Earth and that's how we get night and da
- The Sun simply rises upwards in the morning and then goes downwards in the evening
- The Sun moves across the sky during the day
- Night is caused by the Moon getting in the way of the Sun
- The Earth's shadow is responsible for the phases of the Moon
- The Moon only appears at night.

Working Scientifically criteria met in this unit:

- Asking simple questions and recognising that they can be answered in different ways
- Identifying and classifying
- Using their observations and ideas to suggest answers to questions