Coley Primary School – Knowledge Organiser

SUBJECT FOCUS: Physics strand	Science: Earth and Space	YEAR 5	TERM 4

WHAT? – Key Knowledge

- Describe the movement of the Earth and other planets relative to the sun in the solar system
- Describe the movement of the moon relative to the Earth
- Describe the sun, Earth and moon as approximately spherical bodies
- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky
- Know the sun is a star at the centre of our solar system and that it has 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006).
- understand that a moon is a celestial body that orbits a planet (Earth has 1 moon; Jupiter has 4 large moons and numerous smaller ones).
- Be warned that it is not safe to look directly at the sun, even when wearing dark glasses.
- Find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus.
- Use scientific language: say, read and spell scientific vocabulary.

Famous Scientists - Famous Astronauts:

Yuri Gagarin



Yuri Gagarin – **First man** in space VOSTOCK 1 spacecraft **(1961)**

Valentina Tereshkova



Valentina Tereshkova – **First woman** in space from Russia on VOSTOCK 6 (1963)

Neil Armstrong



Neil Armstrong is one of the icons of modern science and engineering. First man on the moon in APOLLO 11 **(1969)**

Tim Peake



Tim Peake – most recent Briton to go into space **(2015)**

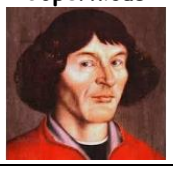
Amazing Facts

Geocentric model

Years ago people believed that planets moved around the Earth.



Nicolaus Copernicus



The work and ideas of many astronomers (such as Copernicus and Kepler) combined over many years before the ideas of the **heliocentric model** was developed. Galileo's work on gravity allowed astronomers to understand how planets stayed in orbit.



Did you know…

It takes 28 days for the Moon to orbit the Earth.
It takes 365 and 1/4 days for the Earth to orbit the sun.
It takes 24 hours for the Earth to rotate on its axis once. Every four years we have an additional day on Feb 29th – this is called a leap year.

The Planets: **Mercury** – the smallest planet. **Venus** – the largest in the sky from earth. **Earth** – the only planet with water on its surface. **Mars** – Known as the 'Red Planet'. **Jupiter** – the largest planet, a gas giant. **Saturn** – famous for its rings, a gas giant. **Uranus** – a gas giant. **Neptune** – blue in colour due to high methane levels. **Pluto** – this used to be a planet but is now known as a 'Dwarf Planet'.

Mnemonic to recall the order of planets:
"**M**y **V**ery **E**asy **M**ethod **J**ust **S**peeds **U**p **N**aming **P**lanets"

WHAT? – Key vocabulary

sun	A huge star that Earth and the other planets in our solar system orbit around.
star	A giant ball of gas held together by its own gravity.
moon	A natural satellite which orbits Earth or other planets.
planet	A large object, round or nearly round that orbits a star.
sphere	A round 3D shape in the shape of a ball.
satellite	Any object in space that orbit something else, for example: the moon is the satellite of Earth.
Orbit	To move in a regular, repeating curved path around another object.

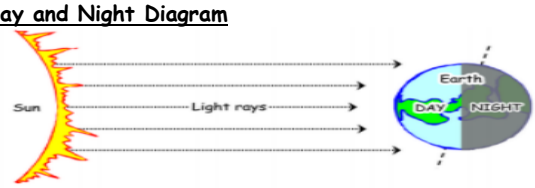
Rotate, axis, astronomer, geocentric model, lunar, heliocentric model, sunlight, sunrise, sunset, universe Galaxy, gravitational pull, solar system, sundial, solar

I wonder… *Can they…*

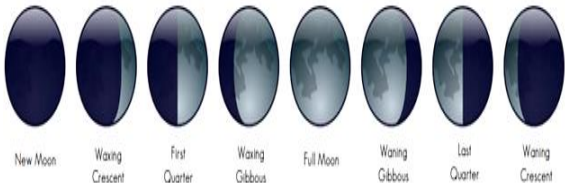
- compare the time of day at different places on the earth?
- create shadow clocks?
- begin to understand how older civilizations used the sun to create astronomical clocks?
- explore the work of some space pioneers? (Galileo, Copernicus, Neil Armstrong)?

Diagrams and symbols

Day and Night Diagram



Moon phase: **The Moon doesn't change shape!** It appears to change shape because we cannot always see the side of the Moon that's in sunlight or we can only see part of the sunlit side of the Moon as it orbits Earth.



Working Scientifically Challenge:

Let's think like scientists…

Can they…

- Identify and explain the movement of the Earth relative to the sun?
- Can they explain how seasons and the associated weather is created?
- Can they identify and explain the movement of the moon relative to the Earth?
- Can they explain the size, shape and position of the earth, sun and moon?
- Can they explain how night and day are created and use diagrams to show this?
- Can they explain how planets are linked to stars?

Possible experiences: *Curious minds…*

- **Research Challenge:** Find out why Mae Carol Jemison is famous.
- **Space: For Kids Who Really Love Space!** *(Smart Kid)*, by Rodger Priddy