St. John's Gosport Church of England Primary School - Science Knowledge Organiser

Year 5 Space and Gravity - What is Earth's Address in Space?

Substantive Knowledge

A **Solar system** is a collection of **planets**, which **orbit** (a curved path) a **star**.
There are huge numbers of stars in space and therefore a huge number of solar systems.
Our solar system consists of 8 planets, many of those planets have **moons** which orbit around them.
Earth's moon is not a planet but is a satellite which orbits Earth. It is around a quarter of the size of Earth.
As the Moon orbits the Earth, the Sun lights up different parts of it, making it seem as if the Moon is changing shape. We call these the phases of the moon.
The Moon doesn't emit (give off) light itself, the 'moonlight' we see is actually the Sun's light reflected off the lunar surface.
Our solar system can be represented with a model but it isn't possible to draw it to scale.
The planets and moons are **rotating** (spinning).
The time it takes one planet to rotate is called a **day**. On Earth this is 24 hours.
The time it takes a planet to complete one orbit around its star is called a **year**. On Earth this is 356.25 days.
The solar system is in a massive collection of stars called the **galaxy** (called the Milky Way).
The Milky Way is one of billions of galaxies in the **Universe**.
Stars are huge balls of gas that produce vast amounts of light and heat.
Asteroids are lumps of rock that orbit a star.
Comets are objects that are made of ice, which melts when they get closer to the sun leaving a tail.
Gravity is force of attraction between two objects with **mass**.
The bigger the mass, the bigger the force it exerts.

Substantive Knowledge

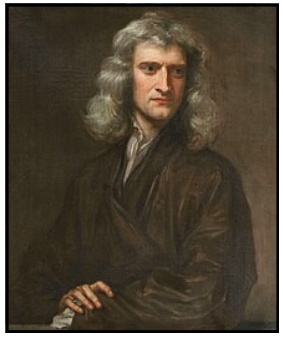
Gravity works over distance but gets weaker as distance
Stars, planets, moons have a very large amount of mass. They
Differences in gravity result in smaller mass objects orbiting

Disciplinary Knowledge

Identifying scientific evidence that has been used to support or refute ideas or arguments.	
Taking measurements, using a range of scientific equipment, with increasing accuracy and taking repeat readings when appropriate.	
Recording data and results if increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	

Significant Scientists

Sir Isaac Newton (1642-1727)



Sir Isaac Newton was an English scientist who studied many different subjects and changed the way we understand the Universe.

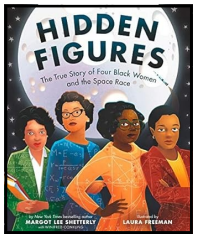
Newton discovered the laws of gravity and motion and invented calculus.

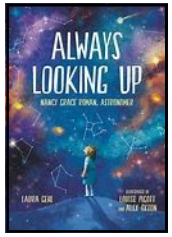
Mae Jemison (1956-)

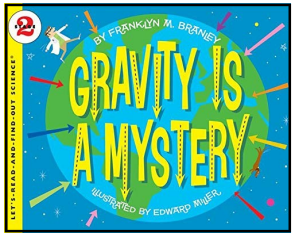
Mae Jamison is an American engineer, physician, and former NASA astronaut.

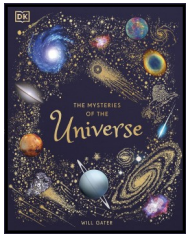
She became the first African-American woman to travel into space when she served as a mission specialist aboard the Space Shuttle Endeavour in 1992.

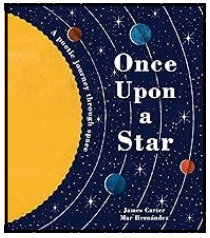
Interesting Books











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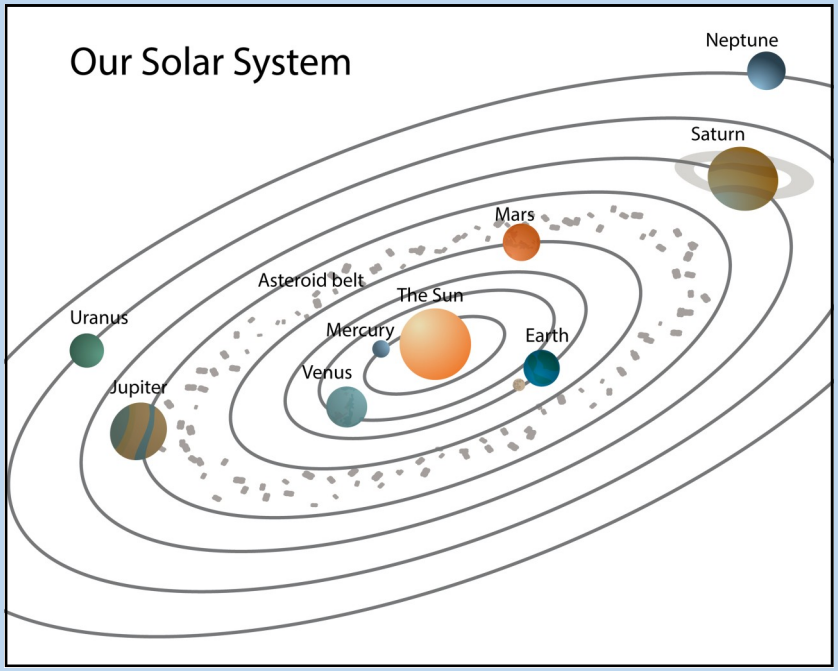
Prior Knowledge

The Solar System



Key Vocabulary

solar system	A collection of planets and moons in orbit around the sun, along with asteroids and comets.
planets	A body moving in an elliptical orbit around a star.
orbit	A curved path of a celestial object round a star or planet.
star	A giant ball of gas in the centre of a solar system that all planets orbit around.
moon	A natural satellite that orbits a planet.
rotating	To move of cause to move around an axis or centre.
day	A complete orbit by a planet on its axis, on Earth equal to 24 hours.
year	A complete orbit by a planet around its star, on Earth equal to 365.25 days.
galaxy	A system of millions or billions of stars with gas and dust held together by gravity.
universe	All existing matter and space as a whole. Contains all galaxies and has been continually expanding since its formation 13.9 billion years ago.
asteroid	A small rocky body orbiting the sun. Many are found between Mars and Jupiter
comet	An object consisting of rock and ice orbiting the sun.
gravity	The force that attracts a body towards the centre of the earth or any other
mass	A quantity of matter measured in kg.

Phases of the Moon