PARK LANE PRIMARY SCHOOL	YEAR 5 EARTH & SPACE	SCIENCE

PRIOR KNOWLEDGE	COMMON MISCONCEPTIONS
Builds on previous knowledge from KS1 on Seasonal Changes: • Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies	• **The Earth is the centre of our Solar System:** This was a common misconception until the 16th century, when Nicolaus Copernicus proposed that the Earth and other planets revolve around the Sun. • **Everything in our Solar System is the same size:** The Sun is the largest body in our Solar System and its mass is around 99.86% of the total mass of our Solar System. Jupiter is the largest planet. • **Everything is just floating in the universe:** Gravity is the force that holds the universe together. It keeps stars and planets in orbit and keeps galaxies together. Without gravity, the planets would fly off into space. • **The Earth is flat.** The Earth is a sphere. • **The Earth is stationary because I can't see it moving:** The Earth rotates on its axis once every 24 hours. This is why we have day and night. It also revolves around the Sun, taking 365 days to do one revolution. • **The Moon is stationary:** The Moon is also rotating on its axis, but its rotation is synchronised with its movement around the Earth. This is why we always see the same side of the Moon from Earth. • **Seasons are caused by the changing distance between the Earth and Sun (the two are closer in the summer and further apart in the winter):** The UK has four seasons because of the tilt of the Earth's axis. The Sun and Earth remain the same distance apart. • **The Sun moves up and down:** The Earth rotates on its axis and revolves around the Sun, which is at the centre of our Solar System. • **There is a definite up and down in space:** The concept of "up" and "down" is relative to a reference point. On Earth, we define "up" as the direction away from the centre of the Earth and "down" as the direction towards the centre of the Earth. However, in space, there is no such reference point. • **The phases of the moon are caused by shadows cast on its surface by other objects in the solar system, particularly the Earth or the Sun:** The phases of the moon are caused by the way that the moon reflects sunlight. As the moon orbits the Earth, different parts of the moon are illuminated by the sun. This is why we see different phases of the moon. • **Because all stars look the same in the night sky, all stars are the same size:** Stars are not all the same size. They can range in size from very small, like the dwarf stars, to very large, like the supergiant stars. • **Because there are so many stars, objects are close together in the universe:** The size of the universe is difficult to comprehend because it is so vast. Our nearest star, Proxima Centauri, is about 4.2 light-years away from the Sun.

Lesson Intention	National Curriculum Reference	Scientific Enquiry	Rocket Words	Resources

Explore the solar system and its planets	Describe the Sun, Earth and Moon as approximately spherical bodies	**Researching using secondary sources:** Identifying scientific evidence that has been used to support or refute ideas or arguments **Observing over time:** Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	➢ Helen Sharman (First Britain in space) terrestrial planet gas giant planets Solar System Spherical orbit	Class presentation, 9 balls (one for the Sun) and a measuring trundle
Understand the heliocentric model of the solar system	Describe the movement of the Earth and other planets relative to the Sun in the solar system	**Researching using secondary sources:** Identifying scientific evidence that has been used to support or refute ideas or arguments	➢ Claudius Ptolemy & Nicolaus Copernicus (heliocentric vs geocentric universe) Astronomy Heliocentric Geocentric dwarf planet orbit	Class presentation, pictures of each planet (from last lesson), newspaper, 9 balloons/balls, oil, PVA glue, a bowl, water, paint, paintbrushes and string
Explain the Earth's movement in space	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky	**Answering questions through collecting, analysing & presenting data (problem-solving):** Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	Axis Poles Season Hemisphere orbit	Class presentation, a torch, a globe, playdoh and kebab skewers or cocktail sticks
Explain the Earth's rotation and night and day	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky	**Pattern Seeking:** Use test results to make predictions to set up further comparative and fair tests.	Sundial time zone gnomon dial shadow	Class presentation, card, scissors, a compass, glue, long wooden kebab skewers and time zone data
Explain the movement of the Moon	Describe the movement of the Moon relative to the Earth	**Researching using secondary sources:** Identifying scientific evidence that has	➢ Neil Armstrong (1st person on the moon)	Class presentation, pinwheel outlines, scissors, split pins, a globe, golf balls and a torch

		been used to support or refute ideas or arguments	moon phase waxing waning eclipse	
Design a planet using knowledge gained	Describe the Sun, Earth and Moon as approximately spherical bodies	**Answering questions through collecting, analysing & presenting data (problem-solving):** Reporting and presenting findings from enquiries.	rocky planet gas planet moon orbit solar system	Class presentation, felt tips, coloured pencils, paint or digital media