

# KS3 Physics – The Solar System – Learning Objectives

NB. Some areas of this topic may be omitted due to time constraints.

	Beginning	Developing	Secure	Embedding	Extending	Excelling	
<b>Ideas About Solar Sys.</b>	-	Explain the difference between the geocentric and heliocentric models of the Solar System.	Describe how ideas about the Solar System have changed to bring us to our current understanding.	Recognise and discuss some of the major milestones of space exploration since the mid-20 <sup>th</sup> century.	Show a knowledge of recent progress in space exploration and future projects.		
<b>The Planets</b>	Name the eight planets in the Solar System in order. Explain the difference between a planet and a star.	Explain how a dwarf planet is different from a larger planet. Explain how gravity helps to keep the planets in orbit around the Sun. Explain why we experience day and night, and why we experience the four seasons. Explain why stars appear to be different sizes and brightness in the night sky.			Show a detailed knowledge about each planet in the Solar System (including size and position (relative to Earth), composition, conditions, moons, days and years, etc). Compare the lengths of our days and years to the other planets, and explain the differences.		
<b>Sun, Moon and Earth</b>	-	With the aid of diagrams, explain the differences between a lunar eclipse and a solar eclipse. Explain the differences between partial and total eclipses. Describe how we can observe a solar eclipse safely. Explain why we always see the same side of the Moon.	Explain why we see the different phases of the Moon.		Explain why eclipses are not observed in a particular location at regular intervals.	-	
<b>Objects From Space</b>	-	Explain the difference between a meteor and a meteorite. Explain what asteroids and comets are.	Explain why a meteor burns up as it enters our atmosphere. Describe and explain why the speed of a comet varies during its orbit. Explain why we may see the same comets at regular intervals. Describe what could happen if a comet were to hit the Earth.			-	-
<b>Space Exploration</b>	Explain that our knowledge of space has increased as technology has developed.	Identify different types of manned and unmanned spacecraft, and describe their uses. Describe some of the difficulties experienced by astronauts when living in space, and suggest some solutions to these problems.		Evaluate the advantages and disadvantages of using manned and unmanned spacecraft for exploration.	Show a knowledge of the objectives and findings of past or current space missions.		
<b>Gravity</b>	Understand that the weight of an object will vary depending on its location in space.	Explain the difference between mass and weight, stating the units for both.	Calculate the weight of an object from its mass and the gravitational field strength at its location.		Explain why the different planets, stars and moons have different gravitational field strengths.	Explain how and why a planet's gravitational field varies as you get further from the planet.	
<b>Satellites</b>	Name some everyday uses for artificial satellites.	Explain what a satellite is, and that they can be natural or artificial (using examples).	Describe (with the aid of diagrams) the differences between a geostationary orbit and a circumpolar orbit.	Discuss the properties of geostationary and circumpolar orbits, and explain why each type of orbit is appropriate to certain applications.		Explain how a satellite is launched into space, and why it stays in orbit.	

\* Objectives covering more than one grade are assessed based on the level of scientific detail and language used by the learner.