

Nova's Celestial Expedition: Investigating the Solar System

Learning objective: To describe the movement of the Earth and other planets relative to the Sun in the solar system, and to understand the role of gravity.

Nova the Barn Owl is mapping the solar system! Use the word bank to fill in the missing facts about our planetary neighbourhood. Once complete, use your scientific knowledge to answer the higher-order thinking questions provided.

Word bank: spherical · orbit · gravity · Sun · axis · geocentric · heliocentric · rotation

1. The planets in our solar system travel in an elliptical _____ around the _____. This model of the solar system is known as the _____ model. (3 marks)

2. Explain why the Earth is described as a _____ body. How does the Earth's _____ on its own _____ result in day and night? (3 marks)

3. What is the invisible force called that keeps the planets in their paths and prevents them from drifting away into deep space? (1 mark)

4. Compare and contrast the ancient 'geocentric' view of the universe with the modern 'heliocentric' view. Why was the shift in understanding significant? (4 marks)

5. Justify your answer: If the Earth's gravity were suddenly to disappear, what might happen to the Moon and the atmosphere? (3 marks)

6. Nova observes that planets further from the Sun take much longer to complete one full journey. Can you suggest a reason why distance affects the time taken for an orbit? (2 marks)

Draw: Draw a diagram of the solar system showing the Sun at the centre. Ensure you include the Earth, the Moon, and the tilt of the Earth's axis. Label the path of the Earth's orbit and indicate which side is experiencing daylight.



Extension challenge: Design a 'Planet Profile' for a fictional planet located in the habitable zone of a distant star. You must justify your choices by describing its distance from its sun, its estimated temperature, and how its gravity would compare to Earth's.