Nova’s Starlit Journey: The Solar System

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

Read the passage carefully, then answer the questions that follow. Use evidence from the text to support your answers.

Nova the barn owl spends her nights perched high in the old oak tree, gazing at the vast tapestry of the night sky. She knows that our solar system is a cosmic dance, with the Sun—a brilliant, glowing star—at its centre. Eight planets, each unique in composition, travel along elliptical paths called orbits. Nova explains that Earth is the third planet from the Sun. It completes one full rotation on its tilted axis every twenty-four hours, which gives us our cycle of day and night. Meanwhile, it takes approximately 365 days for Earth to complete one full revolution around the Sun. This celestial journey is governed by the Sun’s powerful gravitational pull, which keeps all the planets tethered in their respective lanes. Nova often reminds her friends that while the Moon appears to glow, it is merely reflecting the Sun’s light. Looking up, she marvels at the precision of the mechanics involved, understanding that our existence is tied to this rhythmic, perpetual motion through the silent, dark expanse of space.

Word bank: orbit · spherical · axis · solar system · celestial · gravitational

1. According to the text, what are the two main movements Earth performs in space and how long does each take to complete? (2 marks)

2. What physical force does Nova identify as the reason the planets stay in their orbits rather than drifting away? (1 mark)

3. Explain why the Moon appears to shine at night despite the fact that it is not a star. (2 marks)

4. Why might the author have used the word 'tethered' to describe how planets interact with the Sun? (2 marks)

5. Nova describes the solar system as a 'cosmic dance'. Evaluate why this is an effective metaphor to describe the movement of planets. Justify your answer. (3 marks)

Draw: Draw a diagram of the solar system showing the Sun in the centre and Earth in its orbit, including arrows to show the direction of rotation and revolution.

Extension challenge: Compare and contrast the movement of the Earth with the movement of the Moon. What might happen to life on Earth if the planet stopped rotating on its axis? Provide a scientific justification for your prediction.