

Nova's Stargazing Assessment: Understanding Our Solar System

Learning objective: To assess knowledge of the Earth, Sun, and Moon, including the solar system, orbits, and the effects of rotation.

Read each question carefully. Use your scientific knowledge to provide clear explanations. Ensure you use correct terminology when describing the movements of celestial bodies.

Nova the owl spends her nights observing the sky. She knows that the Sun is a star at the centre of our solar system and that eight planets orbit it. She has observed how the Earth spins on its axis once every 24 hours and how the Moon travels around the Earth over approximately 28 days.

Word bank: orbit · rotate · spherical · axis · gravity · lunar · solar · crescent

1. Explain why we experience day and night on Earth. Include the word 'rotate' in your answer. (2 marks)

2. Name the eight planets in our solar system in order, starting from the one closest to the Sun. (2 marks)

3. Compare and contrast the movement of the Earth around the Sun with the movement of the Moon around the Earth. (3 marks)

4. Justify why the Sun appears to move across the sky during the day, even though it is the Earth that is moving. (3 marks)

5. What might happen to life on Earth if the Sun were to suddenly stop emitting light and heat? Explain your reasoning. (4 marks)

6. Describe the shape of the Earth, the Sun, and the Moon. What scientific term is used to describe this shape? (2 marks)

7. Extended Writing Task: Imagine you are an astronaut travelling to a distant planet. Describe your journey from leaving Earth's orbit to landing on your destination. Use scientific vocabulary such as gravity and orbit to explain how you move through space. (9 marks)

Draw: Draw and label a diagram showing the relative positions of the Sun, Earth, and Moon during a lunar cycle, ensuring you indicate the direction of the orbits.



Extension challenge: Total: /25. Consider this challenge: If the Earth's axis were not tilted, how would this affect the seasons we experience in the UK? Justify your answer using your knowledge of the Earth's orbit.