Nova’s Night Sky: Understanding Light

Learning objective: To understand that light travels in straight lines and how we see objects, and to explain how shadows are formed.

Read each question carefully and use your knowledge of light to provide clear, scientific explanations. Max and Nova are here to help you think like a scientist!

Word bank: straight lines · reflection · light source · opaque · transparent · shadow · retina

1. Nova the owl is stargazing. Explain why Nova can see a star in the night sky. In your answer, include how light travels and what happens when it reaches Nova's eyes. (3 marks)

2. Max the monkey is playing with a torch in a dark room. He shines the torch at a wooden box. Why does a shadow appear on the wall behind the box? (2 marks)

3. If Max replaces the wooden box with a clear glass jar, the shadow disappears. Explain the difference between the wood and the glass in terms of how they interact with light. (2 marks)

4. Look at the items below. Categorise them as either a 'Light Source' or 'Reflector': A lit candle, a polished silver spoon, the Sun, a mirror. (2 marks)

5. Why is it dangerous to look directly at the Sun, even with sunglasses on? (1 mark)

Draw: Draw a diagram showing a torch shining a beam of light towards a ball. Clearly label the 'light source', the 'beam of light' (using a ruler for a straight line), and the 'shadow' formed on the ground.

Extension challenge: Nova asks: 'If you are standing in a perfectly dark room with no light sources, can you see your own hand? Explain why or why not using what you know about light reflection.'