

Nova's Night-Time Light Investigation

Learning objective: To understand how light travels, how shadows are formed, and the difference between light sources and reflectors.

Read each question carefully and use your knowledge of light to provide scientific explanations. Think about how Nova the owl uses her sight in different lighting conditions.

Nova the owl is studying the night sky. She knows that to see objects, light must travel from a source to an object, and then reflect into her eyes. She also knows that shadows are created when an object blocks the path of light.

Word bank: light source · reflection · opaque · translucent · transparent · shadow · ray · path

1. Nova observes that the Moon shines brightly at night. Is the Moon a light source? Explain your reasoning using the word 'reflection'. (2 marks)

2. Compare and contrast opaque, translucent, and transparent materials. How does each type affect the formation of a shadow? (3 marks)

3. Explain why your shadow changes length throughout the day if you stand in the same spot while the Sun moves across the sky. (2 marks)

4. Max the monkey is playing with a torch in a dark room. He places a sheet of glass between the torch and a wall. Justify why he does not see a shadow on the wall. (2 marks)

5. If you were designing a pair of curtains to make a room completely dark for a daytime nap, which material property would you choose? Explain why. (2 marks)

Draw: Draw a scientific diagram showing a torch shining on a wooden block. Use arrows to show the path of the light rays and label the shadow, the light source, and the opaque object.



Extension challenge: What might happen if the Earth had two suns? Write a short paragraph predicting how shadows would look differently on the ground and explain your reasoning using your knowledge of light paths.