Nova’s Material Investigation

Learning objective: To compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity, and response to magnets.

Read each question carefully and use your knowledge of material properties to provide detailed answers. Remember to explain your reasoning.

Nova the barn owl is preparing for a night of stargazing and needs to make sure her equipment is perfect! She is testing different objects to see which materials are best for her gear. Use your scientific knowledge to help Nova choose the right materials.

Word bank: transparent · translucent · opaque · conductor · insulator · soluble · insoluble · magnetic

1. Nova needs a material for her telescope lens that allows light to pass through so she can see the stars clearly. What property should this material have, and why would an opaque material be unsuitable? (2 marks)

2. Max the monkey is helping Nova sort materials. He finds a metal paperclip, a wooden block, and a plastic ruler. Which of these items is likely to be magnetic? Explain your answer. (2 marks)

3. If Nova accidentally drops her sugar cube into her cup of tea, it disappears. Using the correct scientific terminology, explain what has happened to the sugar. (2 marks)

4. Nova wants to build a handle for a hot stirring spoon. Should she choose a material that is a thermal conductor or a thermal insulator? Explain your choice. (2 marks)

5. Look at the list of materials: copper wire, rubber, glass, and steel. Which two materials would you group together as good conductors of electricity? Why? (2 marks)

Draw: Draw a diagram of a 'Super Stargazing Kit' for Nova. Label three different parts of the kit and identify the material used for each part (e.g., metal for the tripod, glass for the lens, rubber for the grip).

Extension challenge: Imagine you are an inventor. Suggest a new material that is both transparent and magnetic. What could you use this invention for in everyday life?