

Nova's Material Investigation

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

Nova the Owl is preparing for a stargazing trip and needs to pack her equipment. Sort the items Nova has collected into the table below by matching the object to the property that makes it useful for its purpose. Then, explain why each property is important for that specific object.

Word bank: Thermal insulator · Electrical conductor · Transparent · Magnetic · Hardness · Solubility

1. Nova needs a sturdy metal spoon to stir her hot cocoa. Which property is most important: Electrical conductor or Thermal insulator? Explain why. (2 marks)

2. Nova uses a glass lens for her telescope. Why must this material be transparent? (2 marks)

3. Nova has a metal compass that helps her find North. Why is the property of being magnetic essential here? (2 marks)

4. Nova drops some sugar into her drink. Does the sugar have high or low solubility? What happens to the sugar? (2 marks)

5. Nova chooses a plastic handle for her metal pan. Why is plastic a better choice than metal for the handle? (2 marks)

Draw: Draw a backpack for Nova. Inside, include four items made of different materials (e.g., a metal torch, a plastic water bottle, a woollen scarf, and a glass magnifying lens). Label each item with its material and one key property.



Extension challenge: Nova wants to build a shelter that stays dry in the rain. Research and list three materials that are 'waterproof'. Why would 'absorbent' materials be a poor choice for her shelter roof?