

Nova's Material Marvels: The Science of Stuff

Learning objective: To identify, describe, and compare the properties of everyday materials, including solubility, transparency, conductivity, and thermal insulation.

Join Nova the Owl on a scientific expedition! Read each question carefully and circle the best answer. Remember to think about how materials behave in different conditions.

Answer Key: 1.C, 2.True, 3.False, 4.Conductivity, 5.B, 6.False, 7.Soluble, 8.A, 9.Transparent, 10.True. These questions test understanding of how materials are selected for specific purposes based on their physical properties.

Word bank: Thermal insulator · Soluble · Conductivity · Transparent · Hardness · Opaque · Flexible · Magnetic

1. Nova wants to build a nest that keeps her chicks warm. Which property is most important? A) Hardness B) Conductivity C) Thermal insulation* D) Solubility (1 mark)

2. True or False: A material that allows light to pass through it completely is called transparent. (1 mark)

3. True or False: Metals are generally poor at conducting electricity. (1 mark)

4. What is the scientific term for how well a material allows heat or electricity to move through it? (1 mark)

5. If you stir sand into water, what happens? A) It dissolves B) It stays as a mixture* C) It turns into a gas D) It changes colour (1 mark)

6. True or False: All materials that are magnetic are also metals. (1 mark)

7. Sugar disappears when stirred into hot tea because it is _____ in water. (1 mark)

8. Which material would be best for a window? A) Glass* B) Wood C) Wool D) Brick (1 mark)

9. If a material does not let any light pass through, what do we call it? (1 mark)

10. True or False: Some materials can be separated from mixtures using a sieve if they have different particle sizes. (1 mark)

Draw: Draw a futuristic space-pod designed by Nova. Label three different parts of the pod and explain the properties of the materials used (e.g., 'The windows are transparent to see the stars').



Extension challenge: 1. Explain why copper is used for electrical wiring but plastic is used to cover the outside of the wires. 2. Compare and contrast the properties of a rubber tyre and a metal spoon. 3. Justify why we use double glazing in our homes in the UK. 4. What might happen if a frying pan were made of fabric instead of metal? 5. If you had a mixture of salt, sand, and iron filings, describe a method to separate them. 6. Propose a new material for a school bag that is both lightweight and waterproof; explain your reasoning.