

Year 5 Science Assessment: Properties and Changes of Materials

Learning objective: To identify, describe, and compare the properties of everyday materials and understand reversible and irreversible changes.

Read each question carefully. Use your scientific knowledge to provide clear and concise answers. Ensure you use correct scientific vocabulary.

Nova the owl is preparing for a winter stargazing trip. She needs to select the perfect materials for her equipment. She has a metal thermos, a glass telescope lens, a woollen blanket, and a plastic container for her snacks. Max the monkey is helping her test these items to see how they react to heat, water, and magnets.

Word bank: solubility · transparency · thermal conductivity · reversible · irreversible · filtering · evaporation · magnetic · insulator

1. Nova uses a woollen blanket to keep warm. Explain why wool is a better choice than a thin sheet of metal for a blanket, using the term 'thermal insulator'. (2 marks)

2. Max finds a mixture of iron filings and sand. Describe a method he could use to separate these two materials, justifying why this method works. (3 marks)

3. Define the term 'irreversible change' and provide one example of an irreversible change that might occur in a kitchen. (2 marks)

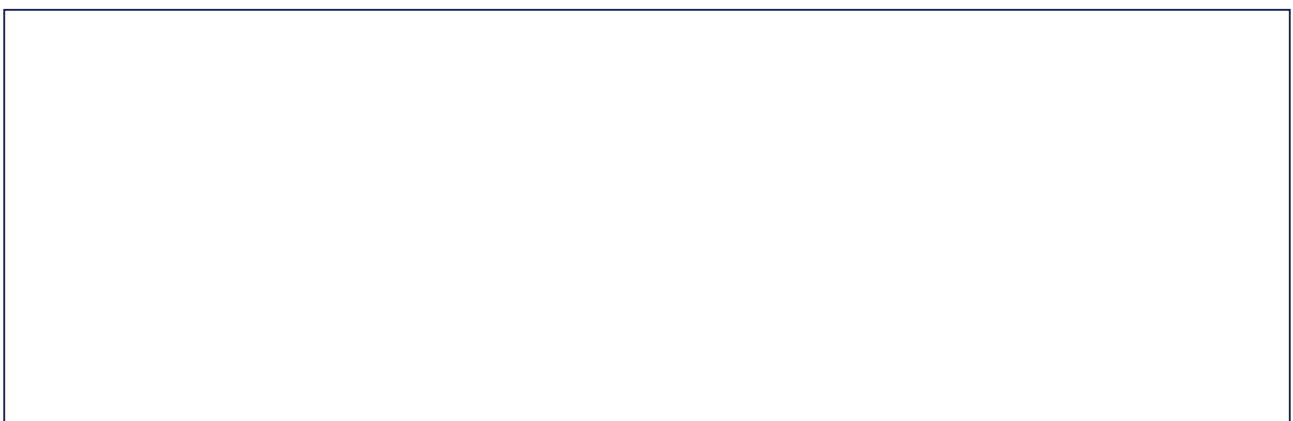
4. If Max dissolves salt in a beaker of water, how could he recover the solid salt from the solution? Name the process and explain the steps. (4 marks)

5. Compare and contrast the properties of glass and plastic. Why might a scientist choose glass for a telescope lens but plastic for a water bottle? (4 marks)

6. Bea the honeybee is investigating materials. She says, 'All hard materials are also strong.' Do you agree or disagree? Justify your answer using an example of a material that is hard but brittle. (3 marks)

7. You are designing a new lunchbox for a hike. Explain, using your knowledge of material properties, why you would choose specific materials for the handle, the base, and the seal. Consider durability, thermal properties, and water resistance in your response. (5 marks) (5 marks)

Draw: Draw a scientific diagram of a filter set-up used to separate a mixture of sand and water. Label the funnel, filter paper, and the resulting filtrate.



Extension challenge: Total: /25. Extension Task: Imagine you are an inventor. Design a new sustainable material that could replace single-use plastic. Describe its properties, what it is made from, and why it would be beneficial for the environment. Explain what might happen if this material were exposed to extreme heat or water.