

Nova's States of Matter Investigation Log

Learning objective: To identify, compare, and group materials as solids, liquids, or gases based on their properties.

Welcome, young scientist! Use this log to observe the world around you. Nova the owl wants to know how you identify different states of matter. Choose three different items from your classroom or home, observe how they behave, and complete the sections below.

Word bank: solid · liquid · gas · particle · fixed shape · flow · compress · property · state · volume

1. Identify your chosen object and describe its physical properties. Does it have a fixed shape? Can you pour it? (2 marks)

2. Classify your object as a solid, liquid, or gas. Justify your choice by explaining how the particles in that state behave. (3 marks)

3. Compare and contrast: How does the behaviour of a liquid differ from a solid when you move them into a different container? (3 marks)

4. What might happen to your chosen solid if you were to apply a significant amount of heat? Explain the process using scientific vocabulary. (3 marks)

5. Explain why a gas is often harder to observe than a solid or a liquid. How can we prove a gas exists even if we cannot see it? (3 marks)

6. Challenge: If you found a mysterious substance that acted like a solid when hit but flowed like a liquid when poured slowly, how would you classify it? Explain your reasoning. (4 marks)

Extension challenge: Design a 'Matter Map' on a separate sheet of paper. Create a flow chart showing how a substance (like water) changes state when energy is added or removed. Use the terms melting, freezing, evaporation, and condensation to label your arrows.