

Nova's Guide to the States of Matter

Learning objective: To identify and describe the three states of matter: solids, liquids, and gases, and understand how they change state.

Read the text carefully and answer the questions below in full sentences.

Nova the barn owl loves stargazing, but today she is focusing on the ground. Everything in our world is made of matter, which exists in three main states: solids, liquids, and gases. Solids, like a smooth pebble or a wooden desk, have particles that are packed tightly together. They cannot move out of place, which is why a solid keeps its shape. Liquids, such as the water in a stream, have particles that are close together but can slide past one another. This allows liquids to flow and take the shape of their container. Gases are different again; their particles are spread far apart and move quickly in all directions. You cannot always see gases, but they fill the space around us, like the air we breathe. Matter can change state when heated or cooled. When ice (a solid) warms up, it melts into water (a liquid). If you heat water further, it turns into steam (a gas). Nova knows that understanding these tiny, invisible particles helps us understand how the whole world works!

Word bank: particles · vibrate · liquid · gas · solid · expand · condense · evaporate

1. According to the text, what are the three main states of matter? (1 mark)

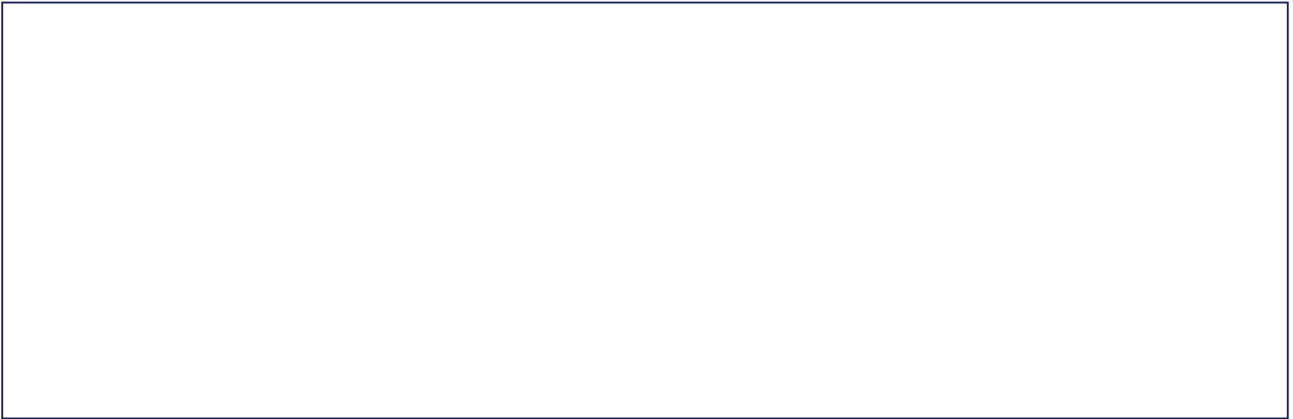
2. How do the particles in a liquid behave compared to the particles in a solid? (2 marks)

3. Why does a solid keep its shape even when you move it from one place to another? (2 marks)

4. Based on the passage, what might happen to a puddle of water if the sun comes out and heats it up? (2 marks)

5. Nova says that understanding invisible particles helps us understand the world. Do you agree with this? Give a reason for your answer. (3 marks)

Draw: Draw three boxes. In the first, draw particles tightly packed for a solid. In the second, draw them sliding past each other for a liquid. In the third, draw them far apart for a gas.

A large, empty rectangular box with a thin black border, intended for a student to draw three separate boxes within it, each representing a different state of matter: solid, liquid, and gas.

Extension challenge: Research what happens to the particles in a substance when it reaches its freezing point. Write a short paragraph explaining the change.