

The Particle Model of Matter

The particle model explains how matter behaves by describing the movement and arrangement of tiny particles ([Knowledge](#), [Understanding](#)). In this worksheet, you will show what you know about how particles are arranged and move in solids, liquids, and gases.

Exercises

1. Particle Arrangement in States of Matter

Complete the table by writing how particles are arranged in each state of matter ([Knowledge](#)).

State of Matter	How particles are arranged
Solid	_____
Liquid	_____
Gas	_____

2. Movement of Particles

Which statement best describes how particles move in all three states of matter ([Knowledge](#))?

- A) Particles only move in solids.
- B) Particles are always moving.
- C) Particles move only when heated.
- D) Particles stop moving in liquids.

3. Spaces Between Particles

Draw a simple diagram of particles in a gas. Show how the spaces between particles in a gas compare to the spaces in a solid. Label your diagram to show "large spaces" and "particles" ([Knowledge](#), [Skills](#)).

Space for diagram:

4. Attractive Forces

In which state of matter are the attractive forces between particles the strongest ([Knowledge](#))?

- A) Gas
- B) Liquid
- C) Solid
- D) They are equal in all states.

5. Relating Particle Movement to Properties

Ice is a solid. When ice melts into water, what happens to the particles ([Knowledge](#), [Skills](#))?

- A) The particles stop moving.
- B) The particles move closer together and vibrate faster.
- C) The particles separate and can slide past each other.

D) The particles disappear.

6. Describing States Using the Particle Model

Use the particle model to explain why a gas takes up more space than a solid made of the same amount of matter. Write your answer in two or three sentences ([Knowledge](#), [Skills](#)).

Answer Key

1. Solid: close together and vibrate in place; Liquid: separated by spaces and can slide past each other; Gas: separated by large spaces and constantly moving in all directions.
2. B
3. Diagram should show particles spread far apart with large spaces between them, compared to a solid where particles are close together.
4. C
5. C
6. In a gas, particles are separated by large spaces and move constantly in all directions. In a solid, particles are close together and only vibrate in place. Because gas particles have more space between them and move freely, a gas takes up much more space than a solid.