

The Particle Model of Matter

This worksheet checks what you know about how particles behave in solids, liquids, and gases, and how their movement and arrangement create physical properties like mass, volume, and density ([Outcome](#), [Details](#)). You will use the particle model of matter to explain and compare everyday materials.

Exercises

1. Matching

Match each state of matter to the correct description of how its particles behave.

State of Matter	Description
A) Solid	1) Particles are close together and slide past each other
B) Liquid	2) Particles are far apart and move in all directions
C) Gas	3) Particles are close together and vibrate in place

Solid: _____ Liquid: _____ Gas: _____

2. Fill in the blanks

Use these words to complete the sentences: **spaces, moving, particles**

- a) All matter is made up of small _____.
- b) Particles of matter are always _____.
- c) Particles of matter have _____ between them.

3. Multiple choice

In which state of matter are the attractive forces between particles the strongest?

- A) Solid
- B) Liquid
- C) Gas
- D) The forces are the same in all three states

Circle your answer.

4. Short answer

Explain, in your own words, why a gas can be squeezed into a smaller space (compressed) much more easily than a solid. Use the words "particles" and "spaces" in your answer.

5. Draw and label

In the box below, draw three small circles arrangements to represent the particles in a solid, a liquid, and a gas. Label each drawing.

Solid box:

Liquid box:

Gas box:

6. Applying the concept

Two containers hold the same volume of liquid, but Container A has a mass of 250 g and Container B has a mass of 180 g.

- a) Which container holds the denser liquid? _____
- b) Explain how you know, using the idea of mass and volume.
-

If Container A's liquid is poured into Container B's liquid, would it sink or float?

Answer key

1. Solid: 3, Liquid: 1, Gas: 2 ([Details](#))
2. a) particles, b) moving, c) spaces ([Details](#))
3. A) Solid ([Details](#))
4. Accept answers explaining that gas particles are spread far apart with large spaces between them, so those spaces can be pushed closer together, while solid particles are already packed tightly with little room to move closer ([Details](#)).
5. Solid: particles drawn close together in a tight, orderly pattern. Liquid: particles drawn close but in a looser, flowing pattern. Gas: particles drawn far apart and scattered ([Details](#)).
6. a) Container A. b) Container A has more mass in the same volume, so it is denser. Container A's liquid would sink ([Details](#)).