

The Particle Model of Matter

Matter is made up of tiny particles that are always moving ([Details](#)). The way particles are arranged and how fast they move explains why solids, liquids, and gases behave so differently ([Outcome](#)).

Exercises

1. Particle arrangement in states of matter

In the boxes below, draw circles to represent particles in each state. Show how the particles are spaced and arranged.

Solid	Liquid	Gas

2. Matching particle movement to states

Write the letter of the correct state of matter next to each description ([Details](#)).

_____ Particles vibrate in place and stay close together.

_____ Particles slide past each other with spaces between them.

_____ Particles move in all directions with large spaces between them.

- A) Solid
- B) Liquid
- C) Gas

3. Attractive forces and particle behaviour

Read each statement. Write True or False ([Details](#)).

_____ Attractive forces between particles are strongest in gases.

_____ In a solid, particles are held closely together by strong attractive forces.

_____ Particles in a liquid have no attractive forces between them.

4. Describing density with the particle model

A block of wood floats in water, but a rock sinks. Use the particle model of matter to explain why. Think about how tightly packed the particles are in each object ([Details](#)).

5. Comparing mass and volume

Two containers hold the same volume of liquid. Container A has more mass than Container B. Which container holds the denser liquid? Circle the correct answer ([Details](#)).

- A) Container A
- B) Container B
- C) Both are equally dense

Explain your answer using the words mass, volume, and density.

6. Compressibility and particle spacing

Air can be squeezed into a smaller space. Water cannot be squeezed as easily. Use the particle model to explain why this difference exists ([Details](#)).

Answer Key

1. Solid: particles drawn close together in a regular pattern or grid. Liquid: particles drawn with small spaces between them, touching or nearly touching. Gas: particles drawn far apart with large spaces between them.
2. A (Solid); B (Liquid); C (Gas).
3. False; True; False.
4. Wood is less dense than water because its particles are more spread out, so it floats. A rock is denser than water because its particles are packed more tightly, so it sinks.
5. A) Container A holds the denser liquid because it has more mass in the same volume.
6. Air can be squeezed because its particles have large spaces between them and are far apart, so they can move closer together. Water cannot be squeezed easily because its particles already have only small spaces between them and are held by strong attractive forces.