

The Particle Model of Matter

Time: 20 min. 6 questions.

Instructions

Answer all six questions. For multiple choice, write the letter of the best answer. For short answer, write one or two sentences. For true or false, write the word True or False. For the numeric question, write the number with its unit.

Questions

1. In the particle model of matter, which statement describes what happens to particles in a gas?
A) The particles are close together and vibrate in place.
B) The particles are separated by large spaces and move constantly in all directions.
C) The particles slide past each other but stay close together.
D) The particles do not move at all.
([Knowledge](#))
2. Describe what attractive forces do in a solid. ([Knowledge](#))
3. True or false: Particles of matter have spaces between them. ([Knowledge](#))
4. A container holds 500 mL of water. If you measure the mass of the water using a balance scale and find it is 500 grams, what is the density of the water in grams per millilitre? ([Knowledge](#))
5. How does the arrangement of particles in a liquid differ from the arrangement of particles in a gas? ([Knowledge](#))
6. Which state of matter has the strongest attractive forces between its particles?
A) Gas
B) Liquid
C) Solid
D) All states have equal attractive forces.
([Knowledge](#))

Curriculum coverage

Question	Outcome Alias
1	Knowledge
2	Knowledge
3	Knowledge
4	Knowledge
5	Knowledge
6	Knowledge

Answer key

1. **B.** Gas particles are separated by large spaces and move constantly in all directions, which is the defining feature of the gaseous state.

2. **Attractive forces hold the particles together tightly in a solid.** In solids, these forces are strongest, which is why particles vibrate in place rather than moving freely.
3. **True.** The particle model states that all matter is made up of small particles with spaces between them.
4. **1 g/mL** (or 1 gram per millilitre). Density is mass divided by volume, so $500\text{ g} \div 500\text{ mL} = 1\text{ g/mL}$.
5. **In a liquid, particles are separated by spaces and can slide past each other. In a gas, particles are separated by much larger spaces and move constantly in all directions.** Liquids have closer particles with weaker attractive forces than solids, while gases have the most space and movement.
6. **C.** Solids have the strongest attractive forces between particles, which keeps them rigid and fixed in shape.