

The Particle Model of Matter

Time: 20 min. 6 questions.

Instructions

Answer each question using what you have learned about the particle model of matter. Read carefully, and try your best. This quiz will help your teacher see what you understand well and what we should practise more.

Questions

- Which statement correctly describes the particles in a solid?
A) They are far apart and move freely in all directions.
B) They are close together and vibrate in place.
C) They have no spaces between them at all.
D) They slide past each other easily.
([Knowledge](#))
- Describe what happens to the movement and arrangement of particles when a substance changes from a liquid to a gas. Use the word "spaces" in your answer.
([Understanding](#))
- True or false: Attractive forces between particles are strongest in gases and weakest in solids.
([Knowledge](#))
- A block of wood has a mass of 12 grams and a volume of 20 cubic centimetres (cm³). Compare its density to the density of water (1 g/cm³). Will it float or sink?
([Knowledge](#))
- Which of these is a physical property of matter?
A) Colour of the container
B) Compressibility
C) Time of day
D) Name of the object
([Knowledge](#))
- Explain why a gas can be squeezed into a smaller space (compressed) much more easily than a liquid. Use an idea from the particle model in your answer.
([Knowledge](#), [Knowledge](#))

Curriculum coverage

Question	Outcome alias
1	Knowledge
2	Understanding
3	Knowledge
4	Knowledge
5	Knowledge
6	Knowledge, Knowledge

Answer key

1. B) They are close together and vibrate in place. In solids, particles stay close together and vibrate rather than move around freely ([Knowledge](#)).
2. When a liquid becomes a gas, the particles spread out into much larger spaces and move constantly in all directions, instead of staying close and sliding past one another as they do in a liquid. (2 marks: 1 mark for describing increased movement; 1 mark for describing increased spaces between particles)
([Understanding](#))
3. False. Attractive forces are strongest in solids, where particles are packed close together, and weakest in gases, where particles are far apart ([Knowledge](#)).
4. The wood is less dense than water because it has fewer grams per cubic centimetre. Since the wood is less dense than water, it will float. (2 marks: 1 mark for correctly comparing density; 1 mark for predicting whether it floats or sinks)
([Knowledge](#))
5. B) Compressibility. Compressibility, along with state, mass, volume, and density, is a physical property of matter ([Knowledge](#)).
6. A gas can be compressed easily because its particles have large spaces between them, so those spaces can be squeezed smaller. In a liquid, the particles are already close together with little space left to compress. (2 marks: 1 mark for identifying large spaces in gases; 1 mark for comparing to liquids)
([Knowledge](#), [Knowledge](#))