

Worksheet 2.3

States of matter and the kinetic model

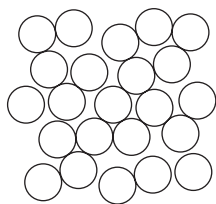
1 Complete these sentences using the words below to fill the gaps.

gases closer particles randomly solids compressed

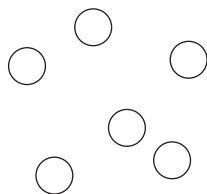
Everything is made up of tiny In and liquids, these particles are close together, so solids and liquids cannot be In, these particles are far apart and moving When a gas is compressed, the particles are pushed together.

2 a The diagrams below show how the particles are arranged in solids, liquids and gases.

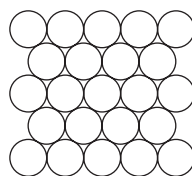
Label them correctly as solid, liquid or gas; and then answer the questions about the different states.



A



B



C

A = B = C =

- b i Which state has the most ordered arrangement?
- ii In which state is there the biggest distance between the particles?
- iii In which state are the particles held firmly in place?
- iv In which two states are the particles able to move from place to place?
- v In which state are the particles the most free to move?

3 a By copying out the sentences below in a suitable order, explain how ice turns to water as it is heated.

As ice is heated, the particles vibrate faster and faster about their positions.

The ice melts.

At 0°C, the particles are vibrating fast enough to start breaking the forces that hold them together.

In solid ice, the particles are vibrating about fixed positions.

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b Sulfur melts at 113 °C. Do you think the forces between sulfur particles are stronger or weaker than those between the water particles in ice? Explain your answer.

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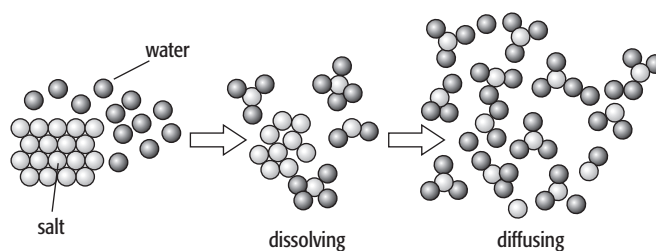
c Alcohol vapour condenses when the temperature drops below 78 °C. Do you think the forces between alcohol particles are stronger or weaker than those between water particles in water vapour? Explain your answer.

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d The diagram below shows how salt dissolves in water. Rearrange the four sentences below to describe how a salt dissolves in water.



Some of the surrounded outer salt particles break free from the crystal.

The salt and water particles diffuse away, allowing more salt particles from the next layer to be freed, and so on.

Water particles surround the salt crystal.

Water particles are attracted to the salt particles in the crystal and surround the salt particles.

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