



STUDY PLUS
A BRIGHTER FUTURE

GCSE Chemistry Booklet 2
(Topics: Bonding and Structure)

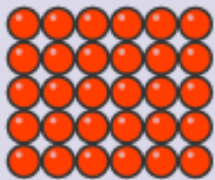
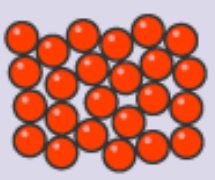
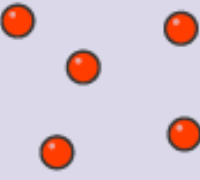
Name: _____

Year: _____

Topic notes

The three **states of matter** are solid, liquid and gas. The **particle model** represents **particles** by small, solid spheres. It describes the arrangement, movement and **energy** of particles in a substance. The model can be used to explain the **physical properties** of solids, liquids and gases.

Particle arrangement and movement

State	Solid	Liquid	Gas
Closeness of particles	Very close	Close	Far apart
Arrangement of particles	Regular pattern	Randomly arranged	Randomly arranged
Movement of particles	Vibrate around a fixed position	Move around each other	Move quickly in all directions
Energy of particles	Low energy	Greater energy	Highest energy
2D diagram			

Solids:

- have a fixed shape and cannot flow, because their particles cannot move from place to place
- cannot be **compressed** (squashed), because their particles are close together and have no space to move into

Liquids:

- flow and take the shape of their container, because their particles can move around each other
- cannot be compressed, because their particles are close together and have no space to move into

Gases:

- flow and completely fill their container, because their particles can move quickly in all directions
- can be compressed, because their particles are far apart and have space to move into

What are the three states of matter?

_____ (1)

In the box, draw the arrangement of particles in a solid. (1)



properties of the particles in a solid?

_____ (2)

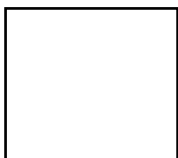
In the box, draw the arrangement of particles in a liquid.



properties of the particles in a liquid?

_____ (2)

In the box, draw the arrangement of particles in a gas.



What are the properties of the particles in a gas?

_____ (2)

What do we call the point at which a solid turns into a liquid?

_____ (1)

What is the name of the process of a liquid turning into a solid?

_____ (1)

What do we call the point at which a liquid turns into a gas?

_____ (1)

What is the name of the process of a gas turning into a liquid?

_____ (1)

What affects the melting and boiling point of a substance?

_____ (2)

What do we call the point at which a solid turns into a liquid?

_____ (1)

What is the name of the process of a liquid turning into a solid?

_____ (1)

What do we call the point at which a liquid turns into a gas?

_____ (1)

What is the name of the process of a gas turning into a liquid?

_____ (1)

What affects the melting and boiling point of a substance?

_____ (2)

What type of bonds are broken during melting and boiling?

_____ (1)

Is more energy needed to turn a solid into a liquid or a liquid into a gas? Explain why?

_____ (3)

What symbol is used to denote that a substance is a solid?

_____ (1)

What symbol is used to denote that a substance is a liquid?

_____ (1)

What symbol is used to denote that a substance is a gas?

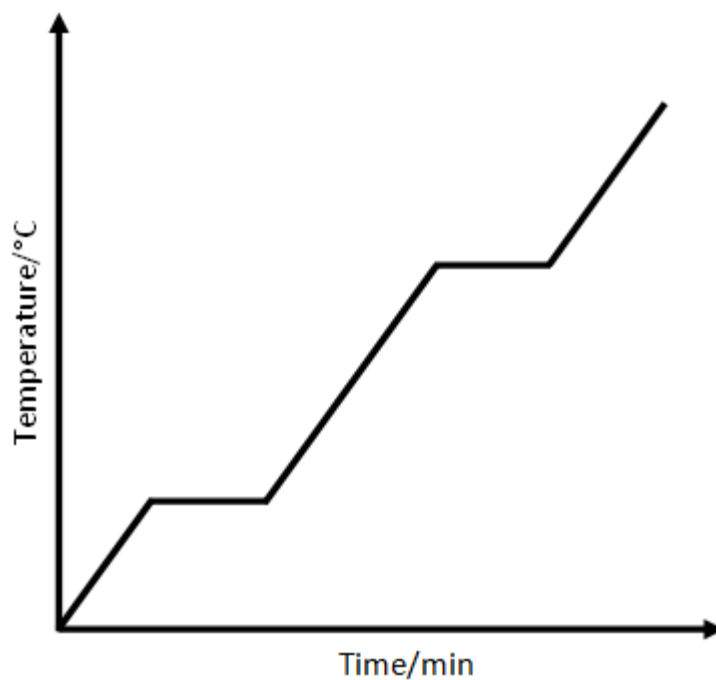
_____ (1)

What symbol is used to denote that a substance is an aqueous solution?

_____ (1)

Add the following labels to this graph. (7)

Solid, liquid, gas, solid melting, liquid boiling, melting point, boiling point.



Explain what the particle model is and its limitations.

_____ (4)



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