

## Year 7 Science – Unit Overview

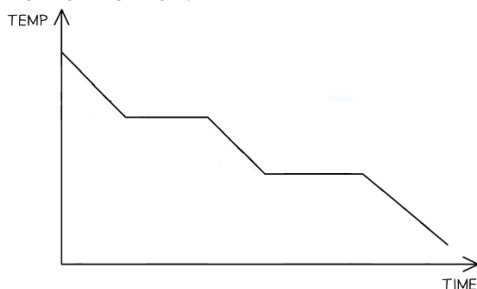
### The Particle Model

#### Unit Summary

In this unit, students will explore a model for the states of matter: solids, liquids, and gases. They will learn how particles are arranged and move differently in each state, and how this explains their distinct properties. Students will investigate how substances change state; such as melting, freezing, and evaporating. They will also discover how the particle model can be used to explain important scientific ideas like diffusion and air pressure.

20 questions to ask, or encourage your child to turn them into flashcards.  
Answers on the reverse.

1. Name the three states of matter.
2. Give one example of something that is a gas at room temperature.
3. Which key word means “how much space something takes up”?
4. Which state of matter cannot change its shape?
5. Which states of matter can flow easily?
6. Are the particles in a liquid arranged randomly or in a regular pattern?
7. How do the particles in a solid move?
8. Draw the particles in a gas.
9. What is the change of state from solid to liquid called?
10. What is the change of state from gas to liquid called?
11. Describe one thing that happens to the particles in a gas when it cools down to become a liquid.
12. Every substance has specific temperatures called its melting point and its boiling point. What happens to the substance at its melting point?
13. If ethanol has a melting point of  $-117^{\circ}\text{C}$  and a boiling point of  $79^{\circ}\text{C}$ , what state of matter will it be at  $85^{\circ}\text{C}$ ?
14. If sodium has a melting point of  $98^{\circ}\text{C}$  and a boiling point of  $883^{\circ}\text{C}$ , what state of matter will it be at  $85^{\circ}\text{C}$ ?
15. A cooling curve is shown below, what is happening when the line on a heating or cooling curve is horizontal?



16. What are the missing words? Diffusion is when particles move from an area of \_\_\_\_\_ concentration into an area of \_\_\_\_\_ concentration.
17. Does diffusion happen faster in solids, liquids or gases?
18. Do the particles speed up or slow down when a substance is cooled down?
19. Gas particles are always moving. What causes gas pressure?
20. Describe one way to increase the gas pressure inside a balloon.

Further information on this topic:

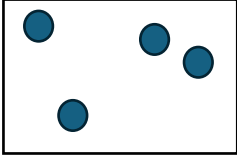
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### Answers

1. Solid, liquid and gas
2. Oxygen, carbon dioxide, helium ... (air is a mixture of different gases)
3. Volume
4. Solids
5. Liquids and gases
6. Randomly
7. Vibrate on the spot / vibrate in fixed positions
8.  - the particles should be far apart, and randomly arranged
9. Melting
10. Condensation
11. They slow down / they move closer together
12. It changes between a solid and a liquid
13. Gas
14. Solid
15. A change of state
16. Higher, lower
17. Gases
18. Slow down
19. The particles colliding with a surface / the walls of a container
20. Add more air particles, heat it up, make its volume smaller (compress it)