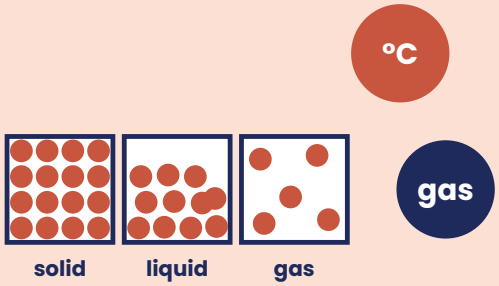
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Year 7 • KS3 Chemistry

States of Matter



Homework Worksheet

Practise the particle model, changes of state, gas pressure and diffusion.

Solids | **Liquids** | **Gases** | **Changes of state** | **Gas pressure** | **Diffusion**

KEY IDEAS IN THIS WORKSHEET **YEAR 7**

Name: _____ Class: _____

Date set: _____ Date due: _____

What's inside

Section A	States of matter	**11 marks**
Section B	Pressure and temperature in gases	**12 marks**
Section C	Diffusion	**12 marks**

Instructions

- Answer all questions in the spaces provided.
- Use ideas about particles in your explanations.
- Marks for each question are shown in [ ].
- Suggested time: 40 minutes.

Total score

/ 35

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States of Matter Worksheet

Year 7 • KS3 Chemistry • Particles in solids, liquids and gases, changes of state, gas pressure and diffusion. Use ideas about particles in your answers.

Section A — States of matter [11 marks]

1 Draw the particles in each box to show how they are arranged in a solid, a liquid and a gas. **[3]**



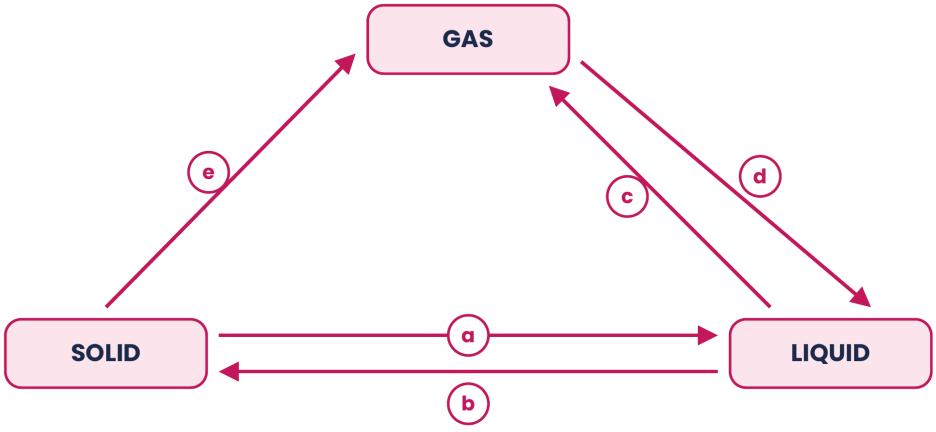
Solid | Liquid | Gas

2 Complete the table. Write **Yes** or **No** in each box. **[3]**

Property	Solid	Liquid	Gas
Has a fixed shape			
Has a fixed volume			
Can be squashed (compressed)			

3 The diagram shows the changes of state. Write the correct name for each arrow **a** to **e**, using the words in the box. **[5]**

Word box melting | freezing | boiling | condensing | sublimation

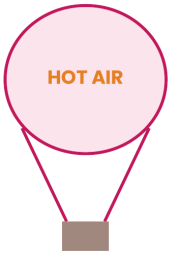


a) ..... b) ..... c) .....

d) ..... e) .....

Section B — Pressure and temperature in gases [12 marks]

4 When the air inside a hot air balloon is heated, the balloon gets bigger.



(a) What happens to the **volume** of a gas when its **temperature** increases? [1]

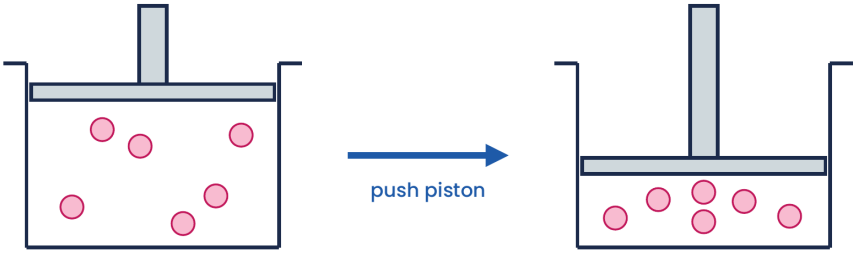
.....

(b) Use ideas about **particles** to explain why the balloon gets bigger. [2]

.....

.....

5 A gas is trapped in a container. The piston is pushed down, which **increases the pressure**.



(a) Has the number of gas particles changed? [1]

.....

(b) What has happened to the volume of the gas? [1]

.....

(c) Explain why the pressure of the gas increases. Use ideas about particles. [2]

.....

.....

(d) **Challenge.** Aerosol cans (like deodorant) carry the warning: *"Do not heat or leave in direct sunlight."* Explain why this warning is needed. [3]

.....

.....

6 A football is pumped up indoors and then taken outside on a very cold day. It starts to feel softer. Suggest why. **[2]**

.....

.....

Section C Diffusion [12 marks]

7 Complete the sentences about diffusion.

(a) Diffusion happens in gases and ..... . **[1]**

(b) Particles move from an area of ..... concentration to an area of ..... concentration. **[1]**

(c) Diffusion happens because the particles move ..... . **[1]**

8 Someone is cooking curry in the kitchen. A few minutes later, a person sitting in the living room can smell it. Explain how the smell reaches them. **[2]**

.....

.....

9 **Exam-style (GCSE / IGCSE).** Cotton wool soaked in ammonia and cotton wool soaked in hydrochloric acid are placed at opposite ends of a long glass tube. After a few minutes a white ring forms inside the tube.



(a) The white solid is ammonium chloride. How do the ammonia and hydrogen chloride particles meet? **[1]**

.....

(b) The white ring forms **closer to the hydrochloric acid** end. What does this tell you about the ammonia particles? Explain your answer. **[2]**

.....

.....

(c) The experiment is repeated in a **warmer** room. Predict how the time for the white ring to form changes, and explain why. **[2]**

.....

.....

10 **Challenge.** A purple crystal is dropped into a beaker of cold water and another into a beaker of hot water. In which beaker does the purple colour spread faster? Explain your answer. **[2]**

.....

.....

END OF WORKSHEET **Total: _____ / 35**