

Alavi

Primary



Learner's Book

4

Compiled by:

Farahnaz Fayaz, Somayeh Babaei, Mahdieh Sepasi
and Seyedeh Farideh Saneie





Introduction

The Primary Science book has been developed to match the Cambridge International Examinations Primary Science curriculum framework. It is a fun, flexible and easy to use course that gives both learners and teachers the support they need. In keeping with the aims of the curriculum itself, it encourages learners to actively engage with the content, and develop enquiry skills as well as subject knowledge.

The content pages contain many images and questions that you can use as a basis for class discussions. The emphasis in this stage is on linking what learners know about everyday life to scientific ideas.

Throughout the book, you will find ideas for practical activities which will help learners to develop their Scientific Enquiry skills as well as introduce them to the thrill of scientific discovery.





Table of Contents



Solids, liquids and gases

5



Environment

13



Electricity

19



Magnetism

25



Humans and animals

31



CHAPTER

1

Solids, liquids and gases



What learners will learn and reinforce

The activities in this chapter give learners practice in the following topics:

Topic	In this topic, learners will:
1.1. What is matter?	identify solids, liquids and gases.
1.2. Melting, freezing and boiling	discover that matter can change phase by melting, freezing and boiling.

Word bank

1	matter	2	solid	3	liquid	4	gas	5	phase
6	particle	7	change shape	8	packed together	9	tightly	10	close together
11	easily	12	far apart	13	example	14	squash	15	melt
16	freeze	17	boil	18	heat	19	cool down	20	occur

1.1. What is matter?

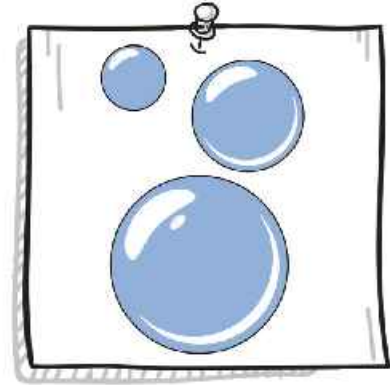
Matter is everything around us.



A brick is a **solid**.



Water is a **liquid**.



The air inside the bubble is a **gas**.

Matter exists in three different states. A state of matter is called a **phase**. These phases are known as solid, liquid or gas.

It is Suni's tenth birthday party.

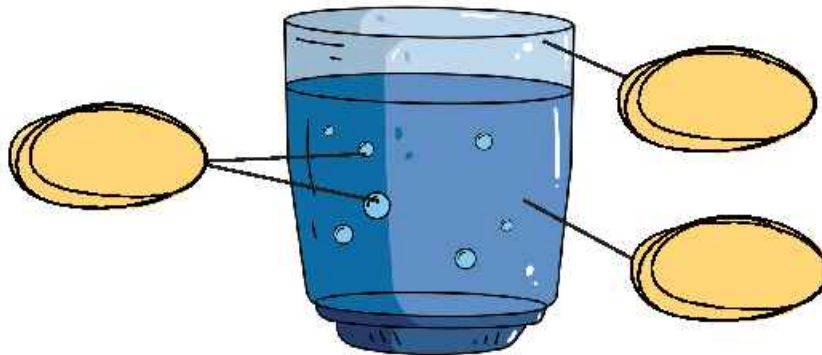
Identify two solids, two gases and one liquid on his birthday table.



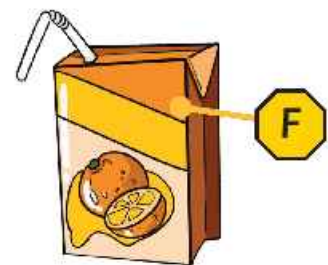
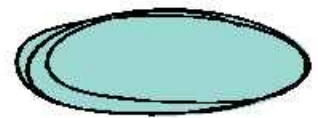
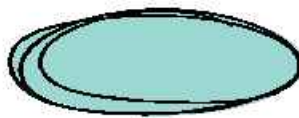
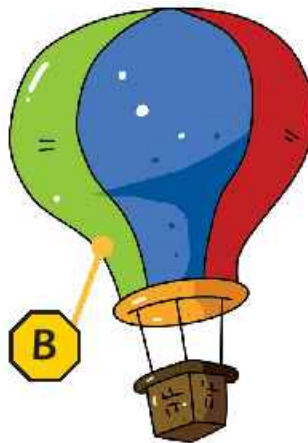
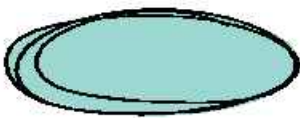
Primary Science

Look at this picture of a glass of soda.

Write labels for solid, liquid and gas in the correct places on the picture.



Identify solids, liquids and gases in the pictures A-F. Write your answer in the space below each picture.



Look at these sentences about matter. Fill in the gaps using the words from the box.

wooden chair

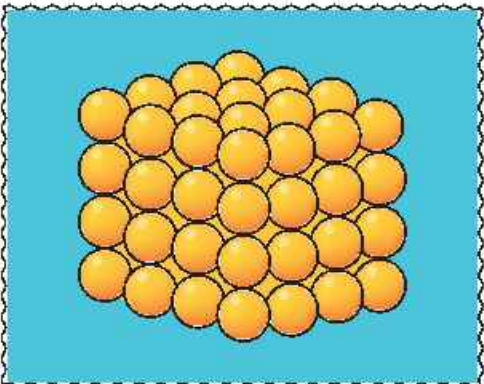
vinegar

phases

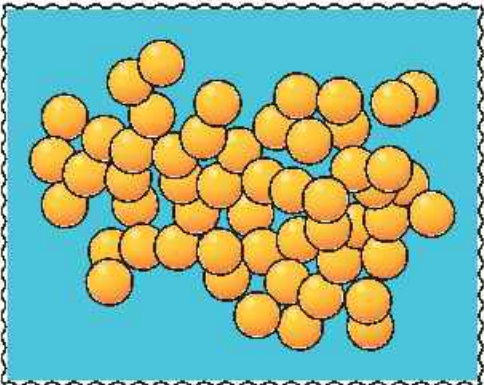
oxygen

particles

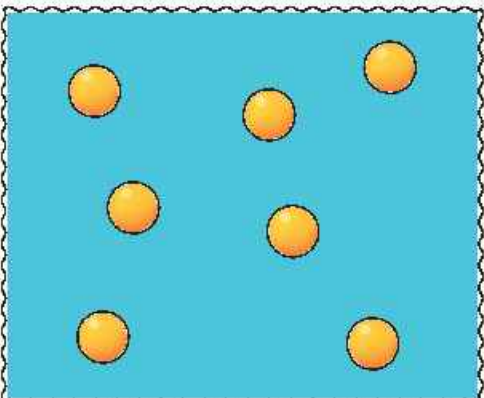
- Solid, liquid and gas are the three of matter.
- All matter is made of tiny pieces called
- is an example of a gas.
- is an example of a solid.
- is an example of a liquid.



Particles within a solid are packed together very tightly in fixed positions. This makes it difficult for the solid to change shape.



Particles within a liquid are close together but they can slide past each other and change places. Because of this, liquids can change shape easily.



Particles within a gas are spaced far apart. This is why gases can have any shape. They can also be squashed easily.

* 1.2. Melting, freezing and boiling

Sabera's ice-cream started as a frozen solid. When the sun heated the ice-cream, it changed to a liquid. This change from solid to liquid is called **melting**.



We can show melting in this way:

solid $\xrightarrow{\text{heat causes melting}}$ liquid



Freezing is the opposite of melting. Freezing is when something changes from a liquid to a solid.

Water exists in three different phases: ice (solid), water (liquid) and water vapour (gas), which we often call steam.

Copy and complete the sentence below. Fill in the phase changes the water went through when it cooled down.

steam (..... phase) $\xrightarrow{\text{cool down}}$ (..... phase)

What happens to the water when you put it in the freezer?

Copy and complete the sentence below. Fill in the phase changes the water went through when it froze.

water (..... phase) $\xrightarrow{\text{cool down}}$ (..... phase)

What happens to ice when it is heated?

- 1) Put the ice cubes into the pot.
- 2) Heat the pot on the hot plate.
- 3) Predict what you think will happen to the ice.
- 4) What happens to the ice?




You will need:
ice cubes, pot (pan or saucepan)
and hot plate.

This is the phase change the ice goes through when you heat it:

solid phase (ice) $\xrightarrow{\text{heat}}$ liquid phase (water)

- 5) Now heat the water until it starts to **boil**.
- 6) Observe how the water changes.

Be careful of the hot plate,
it can burn you.
Steam can also burn you.

-  Melting occurs when a solid is heated and it changes into a liquid.
-  Boiling occurs when a liquid is heated and it changes into a gas.
-  Freezing occurs when a liquid is cooled and it changes into a solid.