

# WALT

Investigate gases and explain their properties.

## Steps to Success

1. I can identify solids, liquids and gases.
2. I can explain some uses of gases.
3. I can investigate the weight of a gas.

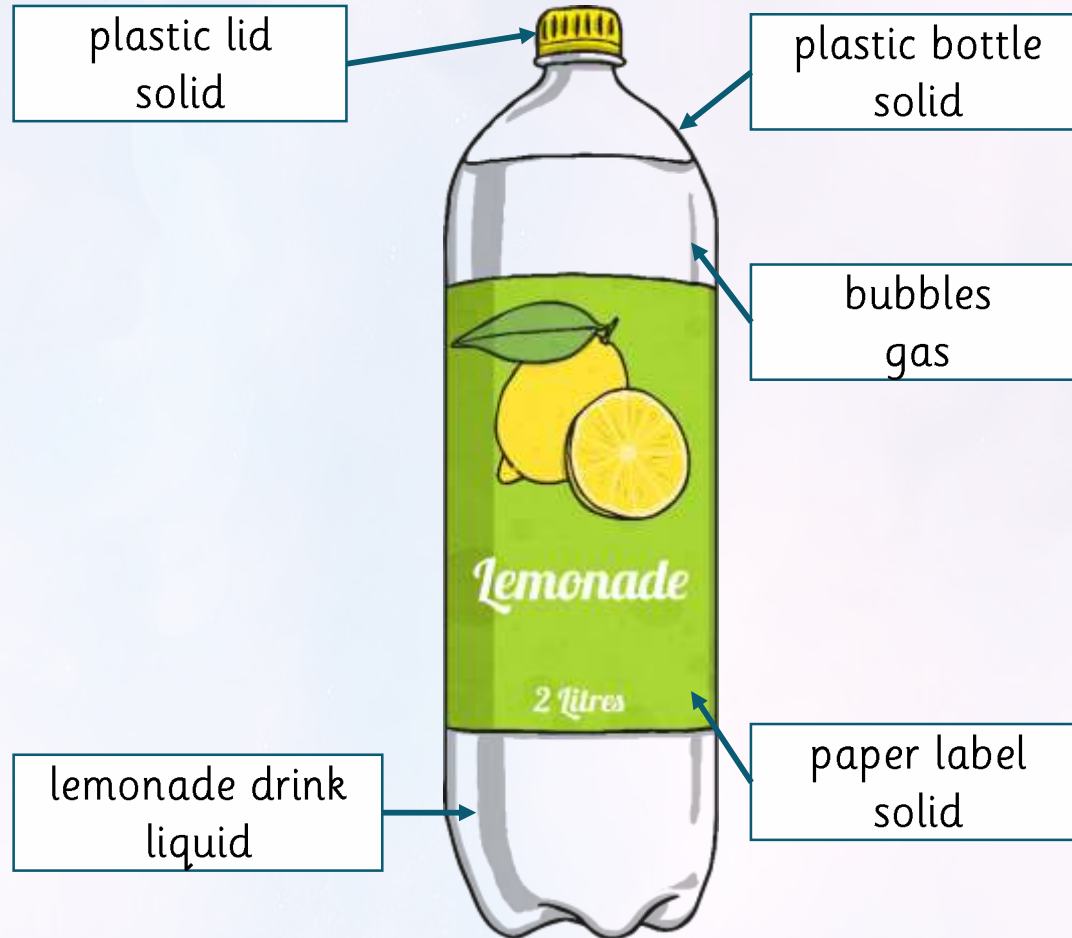
# Identifying States of Matter

Which states of matter can you identify in the materials that make up the bottle of fizzy drink?



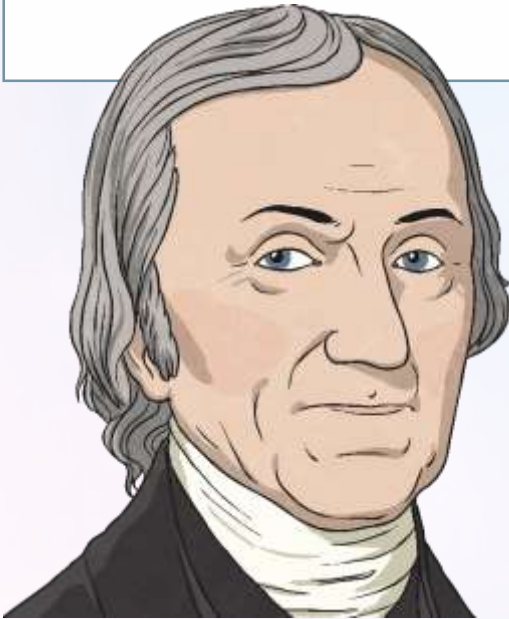
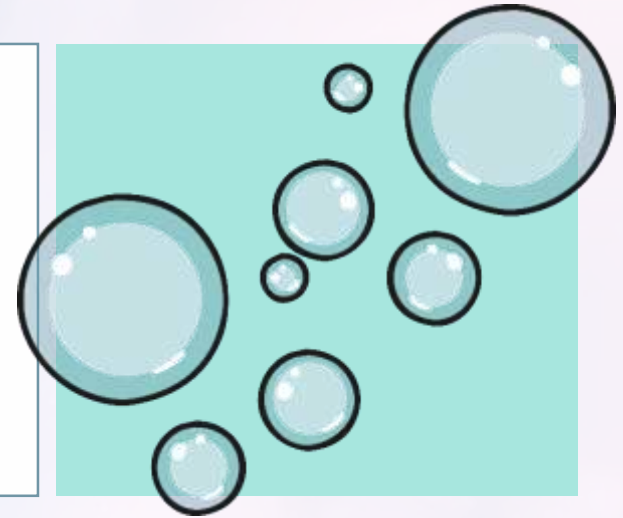
# Identifying States of Matter

Which of these materials and states of matter did you identify?



# Bubbles of Gas

- What are the bubbles in fizzy drinks made of?
- Why are there bubbles in fizzy drinks?
- How are fizzy drinks made?



# What Are the Bubbles in Fizzy Drinks Made Of?

Bubbles in fizzy drinks are made from a gas called **carbon dioxide**.

Carbon dioxide is a gas that is all around us. It makes up only about 0.04% of the Earth's atmosphere.

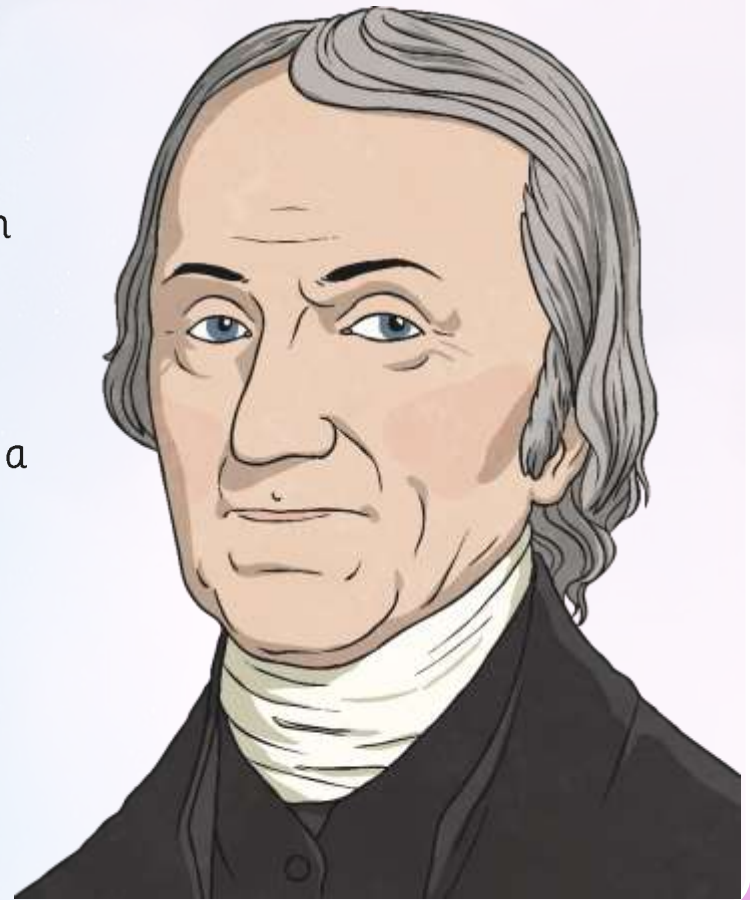


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# Who Invented the First Fizzy Drink?

In 1767, a clergyman and scientist called Joseph Priestly accidentally invented the first fizzy drink. He found a way to dissolve gas in water, making the first soda water, or carbonated water.

When he drank the fizzy water, he described a “peculiar satisfaction”.



# How Are Fizzy Drinks Made?

Fizzy drinks are made by adding carbon dioxide to liquid under huge pressure. The carbon dioxide dissolves in the liquid and settles in the space above the liquid in the bottle or can.

When the container is opened, the pressure decreases and the gas escapes quickly, making a hissing sound. The bubbles appear as the carbon dioxide turns into gas.



# Carbon Dioxide

Carbon Dioxide is often referred to by its formula  $\text{CO}_2$ . It is made up of one atom of carbon and two atoms of oxygen.

Carbon dioxide can be very useful.

It is necessary for life on Earth. When we and other animals breathe out, we release carbon dioxide into the air. Plants then use this carbon dioxide to make their own food in a process called photosynthesis. Plants then release oxygen back into the air for us to breathe.



# Carbon Dioxide

Some fire extinguishers use carbon dioxide to cool flames and to stop oxygen getting to the fire.

Carbon dioxide freezes at  $-78^{\circ}\text{C}$ , and it becomes a solid called dry ice. It is used to transport food that needs to be kept cool and fresh, such as on aeroplanes and trains.



# Do Gases Weigh Anything?

Although gases are very light, they still have mass.

## What is the difference between weight and mass?

Mass is the amount of matter an object contains. Weight is the measure of the force of gravity on an object.



# Comparing the Weight of Gases

We will carry out a fair and comparative test.

You will weigh each fizzy drink, then shake it until it is flat and weigh it again.

The difference between the two weights will tell you how much carbon dioxide is in each drink.



