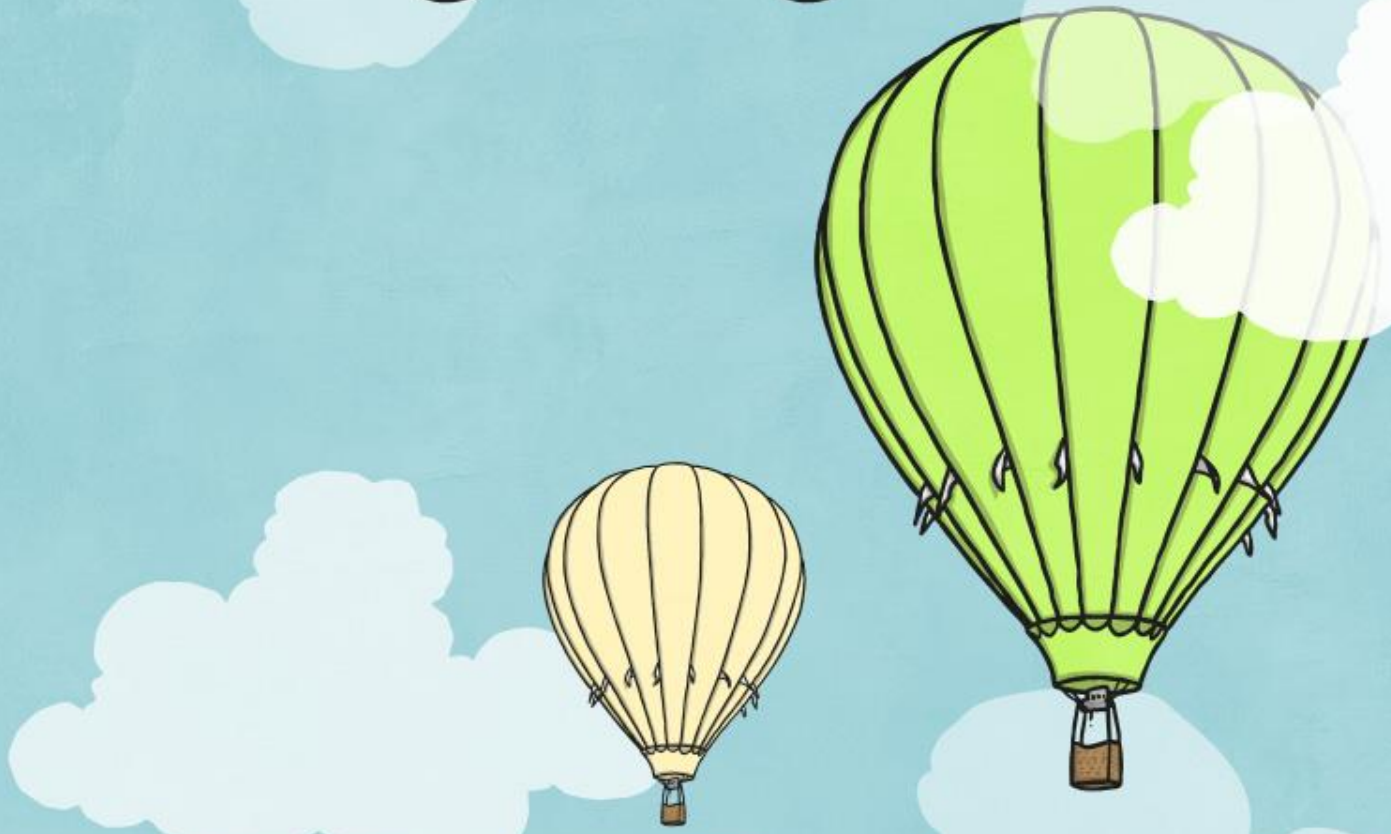
Investigating Gases



Aim

- I can investigate gases and explain their properties.

Success Criteria

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

What Are the Bubbles in Fizzy Drinks Made Of?

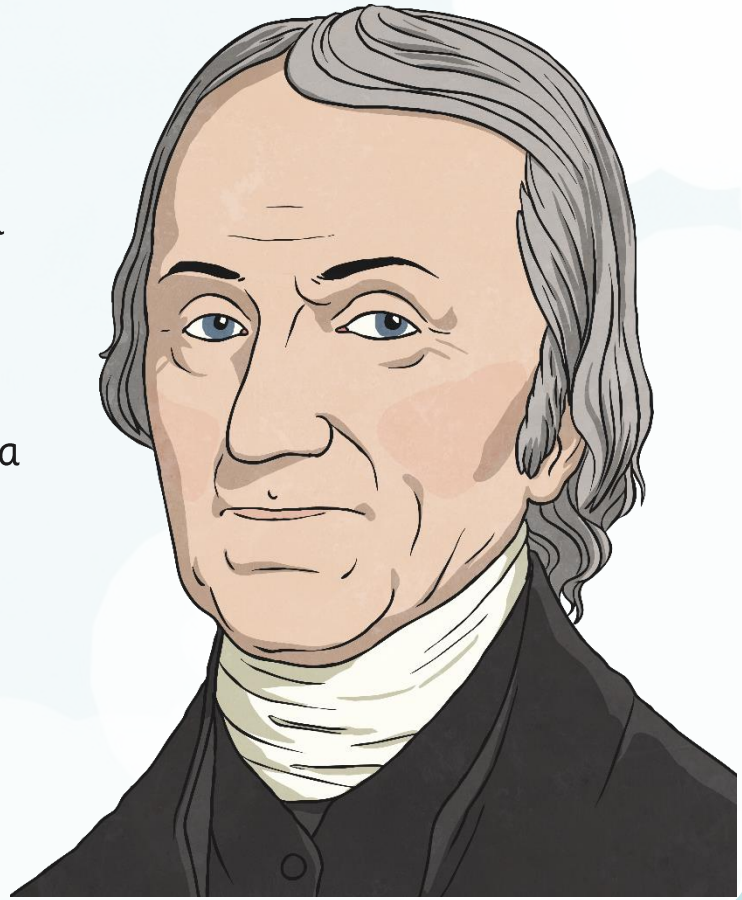
Bubbles in fizzy drinks are made from a gas called **carbon dioxide**.

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

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.

Bubbles of Gas

Carbon dioxide can be very useful.

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

Carbon dioxide freezes at -78°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.

And as you have read, carbon dioxide is dissolved in water to create fizzy drinks.

Do Gases Weigh Anything?

These children are talking about the weight of gas. Who do you agree with?

Gases are lighter than air, so they do not weigh anything.

Gas has no weight because it is invisible.

A gas does have weight because it is a material.

Do Gases Weigh Anything?

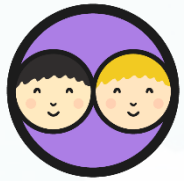
This is Maya. She weighed a glass of fizzy lemonade. It weighed 173.1g. Gently, she swirled the glass around to make the liquid flat, in other words, to remove the carbon dioxide. She weighed the glass again and this time it weighed 172.6g. The drink was **lighter** after the gas had been removed.

This shows that the gas in the fizzy drink, carbon dioxide, does have a weight.

Do Gases Weigh Anything?

Answer: The glass of fizzy lemonade was heavier than the flat drink because it contained carbon dioxide. Some gases are lighter than air and some are heavier. Carbon dioxide is heavier than air.

Comparing the Weight of Gases



- Your task: Mr Spencer wants to find the fizziest drink to serve to his friends at St Mary's. You will need to set up an investigation to compare which fizzy drink has the most carbon dioxide (gas) in it as this is likely to be the fizziest drink.
- You will need to weigh each drink, then shake it until it is flat (make sure the bubbles do not overflow!) and weigh it again. The difference between the two weights (the greater weight subtract the smaller weight) will tell you how much carbon dioxide is in each drink. Don't worry if you don't have lots of fizzy drinks at home, as long as you have one very fizzy drink and some others (even water) to compare it to, then that will be fine.