

The air has a materiality

Experiment 1

Material:

- A container
- A glass
- Some tissue paper
- Some water

What happened?

By returning the glass straight into the water, the water pushes the air into the glass, but the air resists. So, the tissue paper stays dry!



Experiment 2

Material:

- A balloon
- Human breathe

What happened?

Blowing air into a balloon allows you to inflate it and prove its materiality. Let the air escape against your cheek to feel the air's existence.



The air has a mass

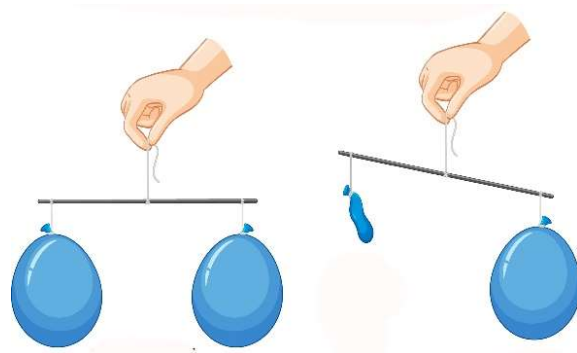
Material:

- two balloons
- a stick
- string

not mandatory but more practical: a support to have your hands free (see video)

What happened?

The balance was perfectly balanced when both balloons were inflated in the same way. Deflating one of the balloons unbalances the balance under the weight of the air contained in the balloon that has remained inflated, showing that air has a mass and weight.



The air is important for life

Material:

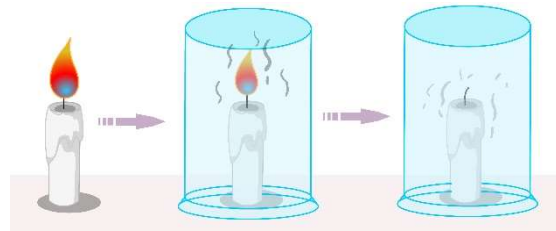
- a candle
- a glass higher than the candle
- matches

What happened?

To burn, the candle needs oxygen. If we lock it up, it consumes all the oxygen in the air and then it goes out.

The candle and the oxygen make a chemical reaction. This forms carbon dioxide.

When we are breathing the air, the oxygen has the same role in our body to provide energy by oxidizing the food we take.



The air is often polluted

Material:

- a sheet of paper
- Scotch
- grease or petroleum jelly

What happened?

We can observe air pollution by installing a white sheet whose surface is greased with petroleum jelly for a few days inside the school's hall or classroom walls.

Air pollution particles attach themselves to the greased surface of the paper and pollutes it.



The air exerts pressure

Experiment 1

Material:

- a balloon
- a plastic bottle
- a candle
- a nail or a knife
-

What happened?

When we try to inflate a balloon in a bottle, the air that exists inside the bottle cannot escape, which makes the operation impossible. If you make a hole in the bottom of the bottle to let the air escape (you can check this with the flame of a candle), you can inflate the balloon more!

This was made possible because thanks to the hole, the air pressure decreased within the bottle (ambient and constant temperature)



Experiment 2

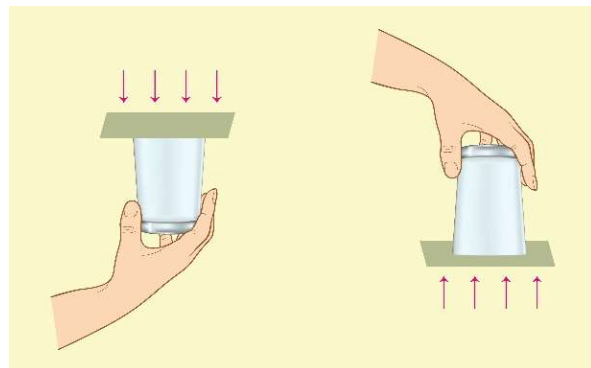
Material:

- a glass
- a sheet
- some water

What happened?

Air pressure acts on all sides of objects, here when we upside down the glass the water does not flow down because the air pressure that act on the paper surface from down is more than the pressure that the water put on the paper from the top.

In other hand, we can say that air pressure that act on the paper surface is more than the weight of the water inside the glass.



The air expands and contract when there is heat change

Experiment 1

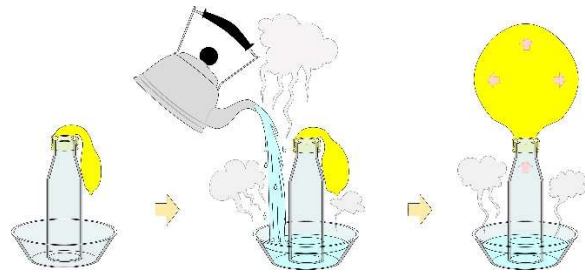
Material:

- a balloon
- a glass bottle or plastic bottle
- hot water
- cold water
- two containers

What happened?

The air inside the bottle and balloon heats up on contact with hot water. This hot air then takes up more space and inflates the balloon: the air is said to have expanded.

If we put the back of this hot bottle with expanded air in the cold water we can see the opposite action.



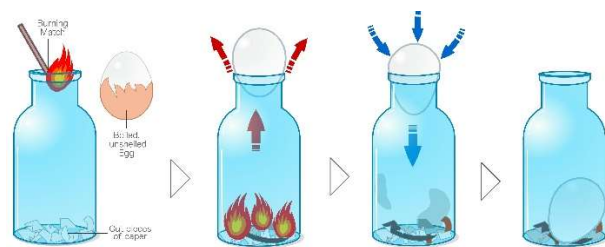
Experiment 2

Material:

- a wide-bottomed bottle
- a boiled and peeled egg
- some paper
- matches

What happened?

The warm air from inside the bottle will expand and come out all around the egg. The heat source will be extinguished by lack of oxygen, the pressure inside the bottle will be smaller than those outside, and the external pressure will push the egg inside.



For more explanations, please refer to : <https://afrane.org/science-4-6-the-air/>

To see more thematics, please visit our [Youtube Science channel!](#)



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