

Pressure

Balloon in a Bottle

Atmospheric pressure and sleight of hand

You will need....

- ✓ A well stretched balloon
- ✓ A clear plastic bottle with stiff sides

Background:

By forcing the air out of the bottle a balloon will stay inflated. This can be used to teach aspects of air pressure and vacuums.

Follow these steps:

1. Place the balloon inside the bottle; spread its neck over the top of the bottle.
2. Place a small hole near the bottom of the bottle. Conceal this hole with your thumb for the moment.
3. Blow up the balloon, air will exit via the hole.
4. Quickly seal the hole with your thumb and the balloon will stay inflated.
5. At this stage you can put a pencil or even water into the balloon.
6. By slowing allowing air to enter the bottle, the balloon will deflate under your command.

So what happened?

There is low pressure in the bottle, lower than the air pressure in the balloon which is equal to the pressure of the atmosphere.

What next?

1. Discuss why it is not possible to blow up the balloon without the hole in the bottle.
2. Putting tape over the hole can leave the balloon inflated.
3. By sucking air out through the hole you will be able to inflate the balloon.

