

HOT AIR BALLOON

Find out how hot air balloons work by using a party balloon!

YOU WILL NEED

- A balloon
- An empty glass bottle
- A glass jar that the bottle can sit in
- Hot water



This experiment must be done under the **supervision of an adult** to ensure safety when using hot water.



WHAT YOU DO

Step 1

Stretch the opening of the balloon over the mouth of the bottle.

Step 2

Fill the glass jar halfway with hot water (not boiling) and gently lower the glass bottle into the jar of hot water and watch what happens.



THE SCIENCE BEHIND IT



The air around us contains lots of different molecules, including the oxygen that we breathe.

When the air heats up this gives the molecules energy, which makes them move around faster. This makes the air expand, because the molecules move further apart from each other than when they are cold, decreasing the density of the air.

This is what is happening inside your bottle; the heat from the hot water gives the air molecules inside the bottle energy to move further apart from one another, and so the air inside the glass bottle expands. Because the air now needs more space than just the bottle, it begins moving into the balloon.

Gases that are less dense than air float upwards, like helium (which is why helium balloons float away if you let them go!) Although your balloon does not have enough hot air inside it to carry away the bottle, this is how hot air balloons work. The air inside the balloon is hotter than the surrounding air, meaning it is less dense and so it can float through the sky!

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