



POP TOP



Introduction (include class level)

When air is warmed does it take less or more space?

Background

Although a drinks bottle with no liquid in it looks empty, it is full of air. If the air in the bottle is warmed, it will take more space.

Try this investigation for some surprising results.

See this in action on <http://scoilchaitrionajnrmsmcloughlin.blogspot.com/2011/12/pop-top-and-bug-spray.html>

You will need

A plastic drinks bottle with a cap, cold water



Method

- Fill the bottle with very cold water, then empty it out. *(This will ensure that the air in the bottle is very cold)*
- Wet the cap of the bottle and place it upside down on the top of the bottle
- Gently place your hands around the bottle
- Hold the bottle BUT DO NOT SQUEEZE IT
- What happens? *(The cap jumps up and down on the top of the bottle) Why? (When you place your hands around the bottle, you warm the air inside it, Air expands when it warms up and tries to escape from the bottle. The wet cap at first acts as a seal and keeps the air in place, but eventually the air has expanded enough to push the top upwards. If the cap doesn't slide or fall, and you keep your hands placed around the bottle, you can continue to make it jump)*

Follow-up

Place a balloon on the top of a small bottle. Place this bottle in a container of warm water and watch the balloon inflate.

Safety considerations (if any)