

Hot and Cold Air Activity

Introduction: This activity will show us the effect that hot and cold air has on a balloon. Allow students to predict, ask questions, and discuss what you are doing to get them involved and excited.

Materials:

- Two containers, one filled with hot tap water and the other with ice and cold water. (Please do not use boiling hot water for this activity. Hot water from the tap will effectively work for this activity).
- 1 balloon
- A 1.25 litre (or 2 litre) plastic soft drink bottle. The larger the bottle the more room the air has to push up and expand.

Steps: During the following steps of the activity, provide children with the opportunity to predict, ask questions and discuss ideas.

1. Blow the balloon up to stretch it and help make it more flexible and let the air out.
2. Place the balloon over the mouth of the empty plastic bottle.
3. Stand the bottle in the center of the container filled with hot water. Wait a few minutes and notice the balloon start to inflate and expand.
4. Remove the bottle from the hot water and place it in the container with cold water and ice. Wait a few moments and notice that the balloon starts to deflate and contract.
5. Repeat step 3 and 4 again.

What occurs: When the air inside the plastic bottle is warmed, it expands and needs more space, therefore it stretches out the balloon. When the bottle is transferred to the icy cold water, the air is cooled; it contracts and needs less space, so the balloon deflates. The mass of air remains constant inside the bottle, so this shows that the warm air requires more space and is less dense than cool air.