



HOW TO BLOW UP A BALLOON WITH HOT AIR



Blowing up balloons is the low-tech activity you've been looking for

Blowing up a balloon with your kids might not seem like an exciting activity, but this project will let them have some fun while getting a science lesson on the side. They'll never want to go back to playing video games again. Well, at least for an hour or so.

Use a balloon and a bottle to introduce your kids to thermal expansion and contraction, which is all around them. For example, the familiar ca-chunk that you feel driving on a bridge is actually the seams designed to allow the bridge to expand on hot days and shrink on cold days. Try this experiment with your kids to catch this phenomenon in a bottle! And not a screen in sight.

GATHER THIS:

- Balloon
- Empty bottle with narrow opening
- 2 tubs
- Ice Water
- Hot Water (about half-and-half boiling water and hot tap water works great!)
- Optional: Thermometer

THEN DO THIS:

1. Stretch the balloon over the opening of the bottle.
2. Set up a cold-water bath and a hot-water bath by pouring several inches of ice water into one tub and several inches of hot water in the second tub.
3. Encourage your child to feel both tubs and notice what they feel like. You can also use a thermometer to observe the differences between the two tubs.
4. Put the bottle in the hot-water bath and push it down so the water rises up around the sides of the bottle. See what happens! Repeat this procedure in the cold-water bath.

*trouble shooting: If nothing happens, try adjusting the temperature of the water by adding either more ice or more boiling water.

ASK THIS:

- What is inside of the bottle? Can the air escape?
- What happens to the air in the bottle when you put the bottle in hot/cold water?
- After experimenting a bit: How can you make the balloon blow up? Shrink?
- What do you predict will happen if we leave the bottle in the hot water for half an hour? Why?

WHAT IS HAPPENING?

When you stretch the balloon over the opening of the bottle, all of the air is trapped inside. Putting the bottle in hot water causes the air molecules inside to heat up and begin taking up more space (thermal expansion), causing air to enter the balloon and inflate it. When you move the bottle into the cold water, the air molecules cool back down and take up less space (thermal contraction).



WHAT THIS TEACHES:

Skills: Cause & effect; observation

Themes: Thermal expansion & contraction; molecules

CuriOdyssey

SCIENCE
PLAYGROUND
& ZOO