



Science Activities

Non-Leak, Leak

Age Range: All Ages

Supplies: Water bottles, water, thumbtack, pan large enough to hold bottle

Set Up: N/A

Instructions: Using the thumbtack, poke several tiny holes towards the bottom of the bottle. Place the bottle in the pan. Fill the bottle with water and keep the water running as you carefully tighten the screw top. The trick is to not let the bottle leak too soon. Keeping the water running as you fill it ensures that there is no air at the top. Holding the bottle by the cap as you move it means that it won't get squeezed. When you are ready, slowly open the top of the bottle and show the water will come out. Try to close the bottle again to see if the water stops!

Everything in this experiment depends on gravity and air pressure. The two need to work together to cause the water to flow out of the bottom of the bottle. When the bottle has been filled, without even the slightest amount of air at the top, gravity is unable to force the water downward because it needs the air-and air pressure- to act as an intermediary. The same force (air pressure) is holding the water back from flowing through the pinholes. When the cap is removed, gravity combines with air pressure at the top of the bottle to overcome the inward air pressure force at the holes. The result is a sudden spouting of water!



Science Activities

Balloon Power

Age Range: All Ages

Supplies: Balloon, plastic cups

Set Up: N/A

Instructions: Blow up the balloon until it is about the size of a grapefruit. Pinch it shut temporarily. Wet the rims of 2 plastic cups. Press the rims of the cups against the side of the balloon and continue to inflate the balloon. The cups should stay attached to the balloon. Repeat the process- pinch, wet, press and inflate- seeing how many cups you can attach to one balloon.

This experiment is all about air pressure and suction. Wetting the rims of the cups allows them to stick on initially because of water tension. But by inflating the balloon and reducing the curvature of the balloon coming in contact with the rims-the air pressure inside the cups reduces somewhat because the same amount of air now fills more space. The air pressure outside the cups, however, remains the same. The difference of pressure causes the cups to be pushed into the balloon.