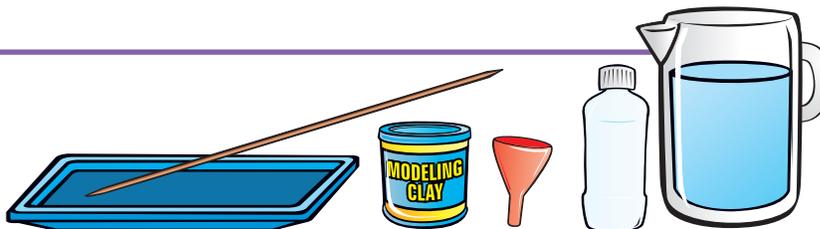


What you need:

- Clear, rigid bottle
- Funnel
- Modeling clay
- Barbecue skewer
- Tray
- Water



What you do:

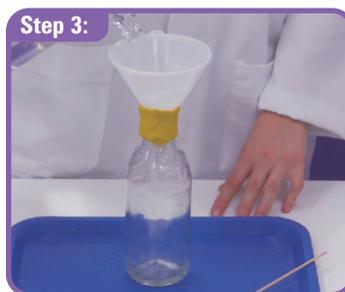
Step 1: Wrap some clay around the funnel's spout. Make sure to keep the opening uncovered.

Step 2: Place the funnel in the bottle. Push the spout that is covered in clay into the bottle's opening.

Step 3: Take another piece of clay and wrap it around the area where the bottle's opening and the funnel's spout meet. This will form a seal. Press the clay firmly to make sure there are no leaks.

Step 4: Quickly pour water into the funnel. What happens?

Step 5: Gently push the skewer through the clay and into the bottle's opening. What happens when you pull the skewer back out?



What's going on:

The bottle, which appears to be empty, is actually full – full of air! Air surrounds us and is made up of gas molecules. Air molecules have mass and take up space, including the space inside the “empty bottle”. The clay creates a seal, so the air molecules can only escape from the bottle through the funnel. When you pour water into the funnel, it pushes down on the air inside, and the air pushes back up on the water. Most of the water cannot enter the bottle because there is already air inside, taking up space. The air cannot escape from the top because the water in the funnel is blocking it. When you pierce the clay seal, it gives the air a way to exit. The hole in the clay allows the water to push the air out of the bottle and take its place.

Now try this:

Can you think of other ways to show how the bottle is full of air? What would happen if you tried to place the bottle, opening first, into a bucket of water? What would happen if there was a hole in the bottle? Make your hypothesis and test it out!