

# Water displacement

## Materials

- Tall container, two-thirds filled with water
- White board marker
- Ball

## Instructions

1. Look at the level of the water in the container and mark it using the white board marker.
2. Push the ball down into the water until it is just covered with water.
3. Mark the new level of water in the container.



## What happens?

The ball will float on top of the water because it is filled with air and has a much lower density than water. Density is the amount of mass in a given volume. You have to use some force to push the ball down into the water as the water is pushing back up on the ball. The water level rises because the volume of the ball has been added to the volume of the water. If you were to measure the volume of the rise in water, this volume would be exactly the same as the volume of the ball, and you can do this using a container that has a graduated volume scale on the side.

## Why does it matter?

The density of an object can be measured using a set of scales to measure the mass and water displacement to measure the volume.  $\text{Density} = \text{mass} \div \text{volume}$

## Related activities

Try using a range of balls or balloons of different sizes.

Fill a cup right to the very top with water. Add coins or marbles, one at a time, and watch how the water rises and overflows out of the cup.

At home, look at the level of water in the bath before and after getting in.

## Health and safety considerations

- Choking hazard for young children (coins or marbles)