



# Intelligent Eggs {experiment}

Teach your kids about the principles of buoyancy with this fun “magic trick” using only simple household items!

## 1 SETUP

- Two 8-ounce glasses
- Water
- 4 tablespoons sugar
- Two uncooked eggs
- Laundry marking pencil

## 2 THE ACT

You give two eggs to a member of your audience. Ask a volunteer to write the word “sink” on one and “float” on the other. You then place each egg in a glass of water and order them to obey the commands written on them. Naturally, they’re smart enough to do as they are told.

## 3 TIPS

This trick uses an old standby of magicians called “misdirection.”

### What’s Happening

When you put a body (such as your own) in water, here’s what happens: Water is pushed aside as the object takes up space that had been occupied by the water. And if you could somehow attach a scale to the object, you’d find it weighed less in water than it weighed on dry land. You’d also find that a floating body gave a zero reading on a scale. Water exerts an upward force, called buoyancy, that works against the downward force of gravity, or weight.

Over two thousand years ago, a Greek named Archimedes investigated buoyancy. He submerged objects in a container that was filled to the brim with water and collected all the water that overflowed. He discovered that the liquid he collected took up the same amount of space as the submerged object. Then he weighed the overflow. He found that the weight of the displaced water exactly equaled the weight lost by the object when it was submerged. If the object floated, the weight of the displaced water equaled the weight of the object in the air.

Archimedes also found that some liquids have greater buoyancy than others. If you took the same volumes of fresh water and water containing dissolved material, such as salt or sugar, you’d find the fresh water weighs less than the solution. Since salt or sugar water weighs more than an equal volume of fresh water, it has greater buoyancy. In other words, it can push up with greater force. If you’ve gone swimming in both salt and fresh water, you’ve probably noticed that you float more easily in salt water.

The eggs appear to obey written commands, but the trick here lies in the “water” in the glasses.

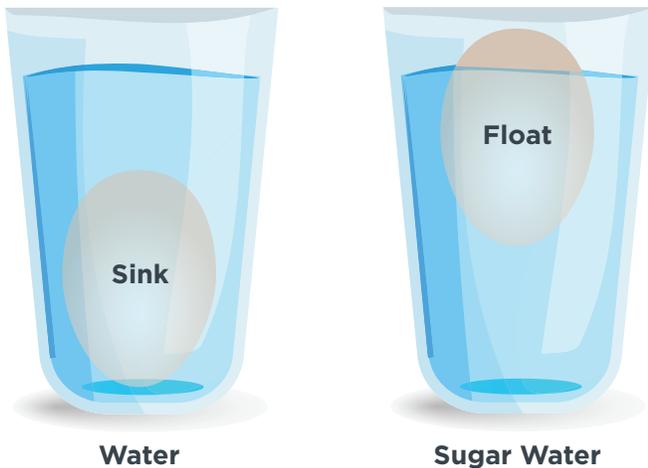
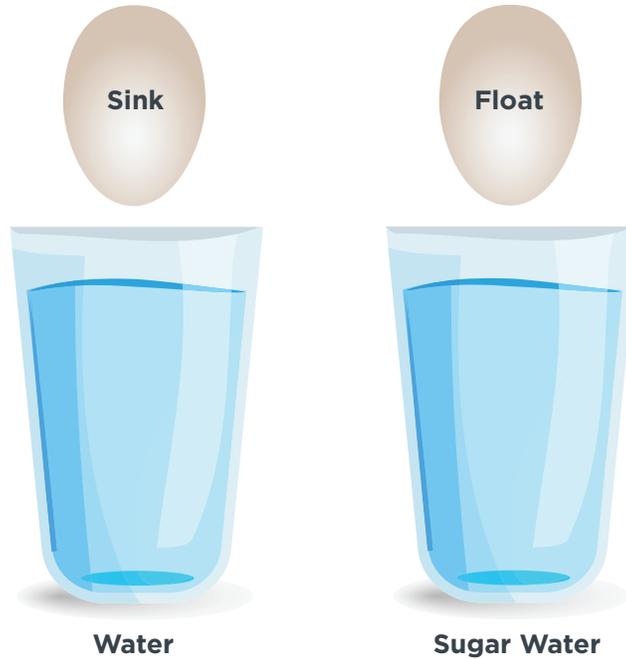
Well before performance time, fill the glasses with water to about three-fourths inch below the top. Dissolve four tablespoons of sugar in one glass. Be sure to remember by position which glass is which.





## The Act

Announce you have two intelligent eggs that obey written commands. Give them to a member of your audience with a marking pencil and give him or her the choice as to which egg will have the word “sink” and which will have the word “float”.



When the marked eggs are returned to you, put the egg marked “sink” in the glass with plain water and the “float” egg in the sugar water. The sugar water has enough buoyancy so that the egg will float. Afterward you can break open the eggs to show there is no trick inside.

### Performance tips

This trick uses an old standby of magicians called “misdirection.” You call attention to the eggs, making it appear that any difference in behavior is due to them. This diverts people’s attention away from where the real secret of the trick lies.



To go deeper, find the full curriculum at [Shop4-H.org/AfterschoolAg](http://Shop4-H.org/AfterschoolAg)