

SALTWATER DENSITY EXPERIMENT

Explore the secrets of seawater



What you'll need:

- Two clear cups
- Tap water
- 2 tbsp salt
- A spoon
- Food colouring
- Two eggs
- A pencil
- Paper
- Other materials for experimenting (see Play section)

Create:

1. Fill both of your cups with tap water.
2. Add 2 tablespoons of salt to one of your cups. Stir the water with the spoon until the salt is all dissolved, then add a couple drops of food colouring to the same cup to help you remember which cup has salt.
3. Gently lower one egg into the cup containing only tap water. Does the egg sink, or does it float?
4. Gently lower the other egg into the cup containing saltwater. What happens?
5. Write down your observations on a piece of paper, or discuss them together. Think about what you see and why it might be happening.

Play:

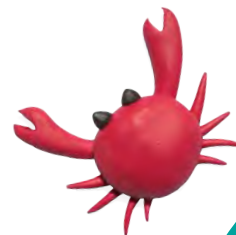
Every time you conduct an experiment, you're using the **scientific method**. Scientists of all ages use this method to explore the world and learn. This method involves coming up with and testing a **hypothesis**, which is an educated guess about why something happens or how it works.

For example, here's one hypothesis for this experiment: Some objects *sink* in tap water and *float* in saltwater.

Experiments are all about learning, but they also involve lots of play! Testing your hypothesis means trying different things to see what happens. Once you've completed the experiment with an egg, try again with a different material. What happens when you add something else, like a toy or a small rock or stick from outside?

Another way to play while testing your hypothesis is to change something else about your experiment.

For example, what happens when you add more salt to the water? What about using a different liquid, like carbonated water? There are countless ways to play and explore!



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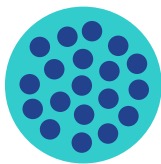
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Learn:

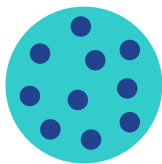
What is density?

Why do some objects sink in tap water and float in saltwater? It's all about density! All objects are made up of millions of tiny particles that can only be seen with a microscope. The **density** of an object has to do with the amount of space between that object's particles.

Imagine you're holding a handful of marbles. If you squeeze your hand shut, there will be less space between the marbles. Now pretend the marbles in your hand are actually particles in an object, like an egg. The less space there is between the marbles, the **denser** the object.



HIGH DENSITY



LOW DENSITY

Just like solid objects, water is also made up of millions of particles. It has its own density. Objects that are denser than water will sink, and objects that are less dense will float.



By adding salt to your second glass of water, you also added more particles. In other words, you made the water denser. When you placed the egg into the tap water, the egg sank because it was denser than the water. But when you placed an egg into the saltwater, it floated: The saltwater was denser than the egg.

By trying the experiment with different materials, you will be testing the density of different objects. If you add more salt to your cup, you increase the density of the water even more.

Why are oceans salty?

Oceans are naturally salty. When it rains, the water gradually breaks apart the salt and minerals found in rocks on land. The salt is washed into streams, which flow into larger rivers and then into the ocean.

There are many rivers feeding each ocean, and all of them contribute salt and minerals to the ocean water. The salt builds up from all of these sources, making the ocean salty. This process never stops or changes, so the amount of salt in each ocean stays in the same range all the time.



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