



Submarines - How do submarines work?

Fact

- Submarines have huge ballast tanks that can be filled with oxygen to make the submarine rise and float or filled with water to make the submarine sink.
- When a submarine wants to sink beneath the water it sucks water into the ballast tanks, which pushes the air out. The water makes the submarine heavy so it sinks.
- When the submarine wants to float again it fills the ballast tanks with air from high-pressure bottles, which pushes all the water out. The submarine becomes lighter so it floats to the surface.

Do you know

- When something is less dense or heavy than water it floats. And when something is more dense or heavier than water it sinks.

Experiments you can do

What you need:

Two cylinders with tight fitting lids. Empty 'Pringles' containers would work well. Or two empty fizzy drink cans and some plasticine to block the hole.

Water

A kitchen sink or a container big enough for the containers to fit in it.

Bathroom scales (if you're using big cylinders like 'Pringles' containers)

Or kitchen scales if you're using small cylinders like fizzy drink cans.

Pen and paper

What you do:

Half fill the sink or container with water. Fill one cylinder with water right to the top and put the lid on or plug the hole with pastercine. Leave the other cylinder empty and put on the lid or plug the hole with pastercine.

Try floating the cylinder full of water in the sink or container. What happens? What happens when you try floating the empty container in the water?

Why does that happen? Remember it's working just like a submarine.

Put the cylinder full of water on the scales and write down how much it weighs. Then put the empty cylinder on the scales. Compare the two weights. They're both the same size – why don't they weight the same amount?

Other Investigations

Do a similar experiment with your bath toys. Get the toys to float then fill them up with water and see if they'll float. When you add water to the toys you are making them denser than water, which means they're heavier than water so they sink.