

# Make a submarine float



## You will need

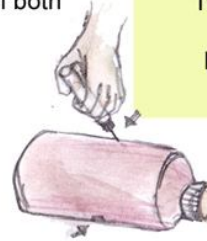
- Large plastic bottle
- Sand
- Plastic funnel
- Tank of water
- Two small plastic bottles
- Burdal
- Scissors
- Two drinking straws
- Rubber bands
- Non hardening clay
- Two bulldog clips



1. Using a funnel, fill a large bottle with just enough sand so that the bottle sinks. Test the bottle by placing it in water to find out the right amount

2. Make a hole of about 1/2" on one side of both the small bottles

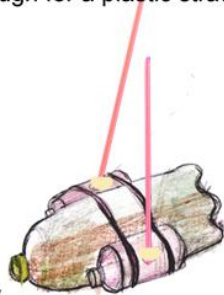
3. On the other side make a small hole enough for a plastic straw.



4. Attach the two small bottles to both sides of the large bottle using rubber bands. Make sure the small holes in the bottles face upward.

5. Push the straws into the holes.

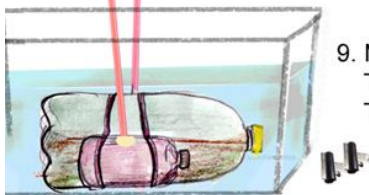
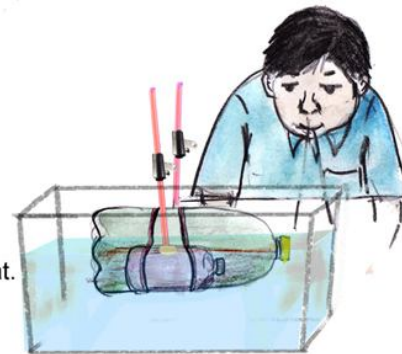
6. Seal the joint with modelling clay to make it water tight



7. Put the bulldog clips on the straws halfway from the top so as to stop the air from being forced out by the water.



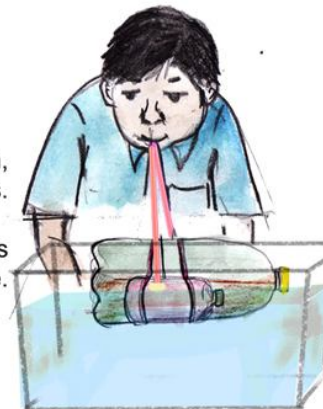
8. Put the submarine in the water. With the clips on, it will float.



9. Now try taking the clips off the straws. The water will flood the buoyancy tanks. The submarine will sink.

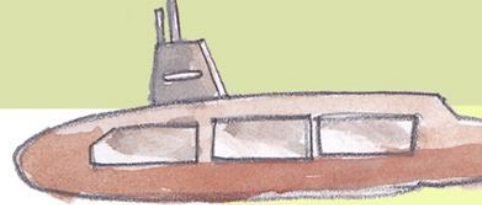
10. To make the submarine float again, slowly blow into the straws.

The air will force the water out of the tanks and you have a floating submarine.



Once re-surfaced, to keep it from sinking, place the bulldog clips back on the straw.

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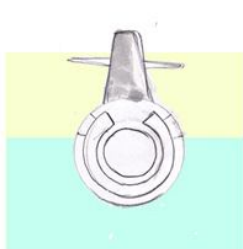
Submarines have huge tanks called the buoyancy tanks.

There are valves on a submarine that allow water in to the buoyancy tanks.

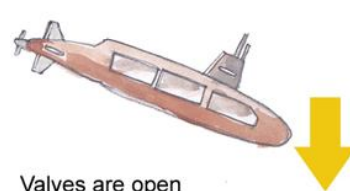
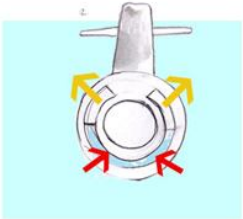
The more water in the tank the faster the submarine will descend into the ocean.

To surface, the core of the submarine lets out air into the tanks making the water rush out of the flood ports making the submarine more buoyant.

This buoyancy will allow the submarine to ascend to the surface.



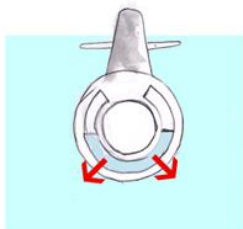
The tanks are full of air  
The valves are closed



Valves are open  
Tanks are filled with water



Tanks are full  
Submarine submerged.



Air is forced in  
so water is forced out.

Red arrow > water flow  
Yellow arrow > air flow