



Cartesian Diver

Explore the concepts of buoyancy and pressure using simple materials to create a diver that rises and sinks. Feel free to make your diver into a jellyfish!

Materials

- 🚀 A plastic bottle with lid
- 🚀 Water
- 🚀 Soy Sauce Fish Bottle **OR**
- 🚀 Plastic straw
- 🚀 Bluetac or plasticine
- 🚀 Scissors
- 🚀 Food dye (optional)
- 🚀 Balloon (optional)



Method

Step 1: Fill the plastic bottle completely to the top with water. *OPTIONAL: Add some food dye to your water for some extra fun.*

Step 2: If you are using a Soy Sauce Fish Bottle, place it into the plastic bottle and screw the bottle lid on.
OR

If you are not using a Soy Sauce Fish bottle, create your diver by folding your straw in half (or at the corrugated bend). If one side has extra length, cut it so that both sides of the straw has equal length.

Step 3: Place a ball of bluetac or plasticine on your straw, about 1mm above the side of the straw with the open holes (not at the bend). *OPTIONAL: Cut off the balloon ~3cm from the opening and cut perpendicular slits up to the ribbed edge. This will create a skirt you can add to your diver to make it look like a jellyfish.*

Step 4: Once your diver is in the bottle, squeeze the bottle to watch your cartesian diver sink to the bottom of the bottle. Then release the pressure to watch them float back up to the top.

What is happening? The Science explained.

The Cartesian Diver experiment demonstrates principles of buoyancy and pressure. When you squeeze the bottle, the increased pressure compresses the air bubble inside the straw, making it denser and causing it to sink. Releasing the pressure allows the air bubble to expand, decreasing the diver's density and causing it to rise. This simple setup illustrates how changes in pressure can affect an object's buoyancy in a fluid.