PROFESSOR PETE'S MESSY SCIENCE

DIVER IN A BOTTLE

What you need:

- Plastic pen lid (a biro lid is ideal)
- Small piece of blue tack
- Glass of water
- Large plastic drinks bottle filled with water

What to do:

1. First make the diver. Cover the hole in the pen lid with a small piece of blue tack and attach another piece to the clip.
2. Put the lid in the glass of water; it should float upright. If not, you can add or remove some of the blue tack until it does.
3. Drop the diver into the bottle of water and make sure it is filled all the way to the top. Your pen lid should be just at the surface.
4. Screw the lid on TIGHTLY!
5. Squeeze the bottle as hard as you can.

What happens?

You should find that when you squeeze the bottle the diver sinks to the bottom, and when you let go, the diver rises to the top.

Why does this happen?

This is because there is an air bubble trapped in the pen lid. When you squeeze, water is forced into the lid, which compresses the air bubble and makes it more dense, so it sinks. When you release the pressure the air bubble expands and the lid floats to the surface again.

This experiment is sometimes called the **Cartesian Diver** and shows us how submarines work. When a submarine is ready to dive, tanks on board fill with water to compress the air and make it heavy enough to sink. When it's ready to resurface, the water is forced out and the submarine can ascend to the surface.

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