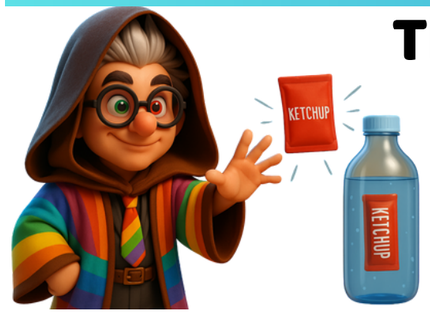


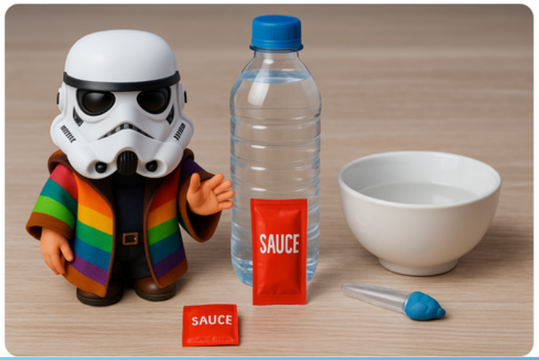
The Force of the Sauce

Let's explore how the magical world of Jedi powers, sauce packets, buoyancy, and pressure all team up to let YOU control the movement of objects inside a bottle!

It might look like a ketchup packet floating lazily on the surface, but with just a squeeze of the bottle you can command it like a Jedi mind trick. By changing the pressure, you'll change the density — and suddenly you've got the power to sink or float your ketchup submarine on demand!

Before we start — what do YOU think will happen?"

- **Will the ketchup dive straight to the bottom when you squeeze?**
- **Or will it hover in the middle, waiting for your next Jedi command?**



What You Need

- Sauce / ketchup / mustard packet
- 1.25 L bottle of water & cap.
- Bowl of water

Take it Further

clear plastic pen lid
BlueTack or plasticine

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Step-by-Step:

1. **Choose Your Padawan Packet**

Drop sauce/ketchup/mustard packets into a bowl of water.

- Floats? Knighted as a Diver!
- Sinks? Send it back to the Dark Side and try another.

2. Fill Your Training Bottle

Fill a clear bottle right to the top with water (no gaps).
Seal it super-tight—air is the enemy!

Professor tip: Less air in the bottle = better "squeezability" and smoother diving.

3. Insert the Diver

Slide your floating packet into the bottle. It should bob near the surface like a tiny tomato raft.
Cap the bottle tightly again if you opened it to pop the packet in—remember, no air gap.

3. Use the Force (aka The Squeeze)

- Squeeze = packet dives to the bottom.
- Relax = it floats back up.
- Gentle squeeze = hover mid-water.

Advanced Jedi move: hold it perfectly still in the middle for 3 seconds.

Fine-Tune Like a Scientist

- It won't dive: Add a tiny pinch of salt, recap, and try again. (Salt makes the water denser, so a small squeeze changes the packet's density more dramatically.)
- It sinks all the time: Pour out a little water, add fresh plain water back to the very top, recap tight, and test again. Try a different packet if needed.
- Bubbles on the packet? Tap the bottle to knock them off—bubbles can mess with buoyancy.

What's going On?

Inside your sauce packet is a tiny bubble of air. When the bottle is just sitting there, that bubble is big, so the packet is less dense than the water — it floats.

But when you squeeze the bottle, you increase the pressure on the packet. That squashes the air bubble smaller, making the packet denser than the water. Suddenly, it sinks!

Release the squeeze, and the bubble expands again, lowering the density — whoosh, the packet floats back up.

✨ **Jedi Trick:** By controlling the size of the air bubble with your "Force squeeze," you control whether the packet rises, falls, or hovers in the middle!

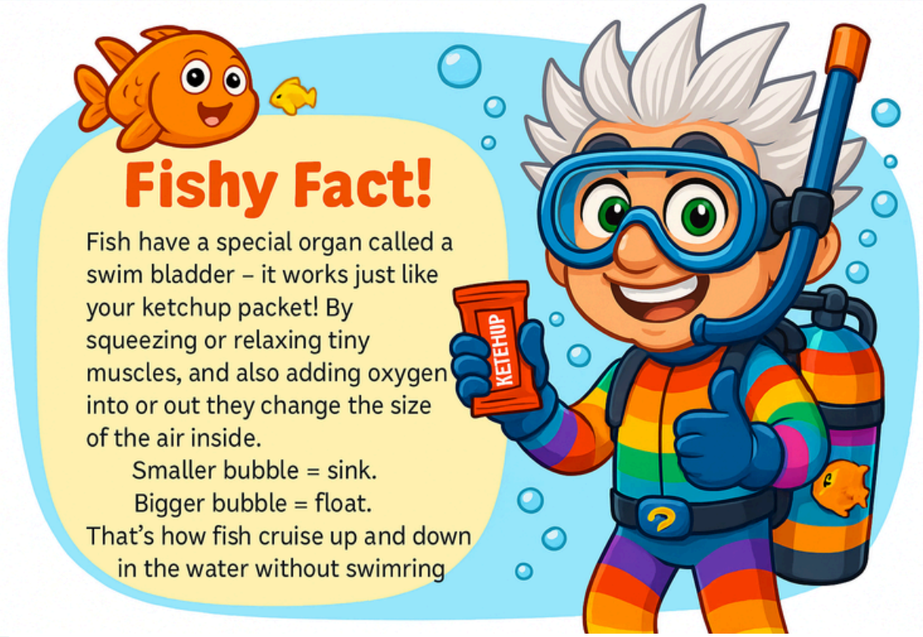
Not Squeezing

Squeezing

Take It Further: The Clear Pen Lid Diver

Want to see the "Force" in action even more clearly? Try swapping your sauce packet for a clear plastic pen lid.
Seal the open end with a little Blue Tack or plasticine so it traps some air.
Drop it into your training bottle. If it floats, you're ready to go Jedi mode!
Now when you squeeze the bottle, you'll actually see the air bubble shrink and expand inside the lid.

This makes it super easy to understand why the diver sinks (more dense) and floats (less dense). You can even compare different amounts of air in the lid to see how it changes the trick!



STEAM

- Test different divers: ketchup, soy sauce, mustard, or even the clear pen lid diver. Which ones sink faster? Which ones are easier to control in the middle?
- Film your Jedi squeeze in slow motion on a phone or tablet. Can you catch the exact moment the air bubble shrinks and the diver sinks?
- Build your own "diver lab"! Try bottles of different shapes or materials. Does a wider bottle make it harder or easier to squeeze and control the diver?
- Draw a cartoon of your ketchup diver as a tiny submarine with a pilot inside. Give them a thought bubble when you "Force squeeze" them down into the depths!
- Count how many squeezes it takes to keep your diver hovering for 10 seconds. Compare with a friend — whose Jedi powers are stronger? Record and graph your results.