CARTESIAN DIVER

Add this simple Cartesian Diver experiment to your physics lessons!

Materials

Water bottle with cap
Water
Sauce packet

INSTRUCTIONS:

STEP 1: Pour a glass of water and test sauce packets until you find one that floats right under the surface of the water.

STEP 2: Now place the sauce packet into an empty plastic water bottle.

STEP 3: Fill the water bottle completely with water all the way to the top. Gently squeeze the bottle just a bit and then screw on the cap.

STEP 4: Now use two hands to squeeze the bottle and watch what happens! Record your observations.

THE SCIENCE

The name 'Cartesian diver' comes from the way the diver moves up and down, similar to how we use coordinates to show a point's position on a graph. The diver changes its position when you change the pressure in the bottle. It's named after a famous thinker, René Descartes, who came up with the idea.

When you squeeze the bottle, you push on the water, and the water pushes on the air inside the diver. Water can't be squished, but air can. So, the air inside the diver gets squeezed and takes up less space. When the air gets smaller, the diver becomes heavier and sinks to the bottom of the bottle. When you stop squeezing, the air in the diver goes back to its normal size, and the diver floats back up.

Cartesian Diver Experiment

Use this worksheet to process and evaluate your observations.

Can you predict what will happen before you squeeze the bottle?

What happened to the diver when you squeeze the bottle?

What happened to the diver when you stopped squeezing the bottle?

Why does the diver float back up when you release the pressure?

What did you learn from this experiment?


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