

Materials

- The Divers: the plastic droppers with attached metal nuts. **BRING THEM BACK TO SCHOOL on _____** (1 pt)
- A 2 L bottle filled with water.
- A glass or jar $\frac{3}{4}$ filled with water to prepare the divers before putting into the 2 L bottle.

Procedure

1. Use a glass jar with water to “prepare” the divers.
 - To be effective, you must squeeze some water into the dropper so that the diver will just barely float at the very surface of the liquid.
 - If the diver is bobbing too far above the surface of the water, it will be extremely difficult to get it to dive when you put it into the 2 L bottle.
2. Put a single diver into the 2 L bottle. Close the cap tightly and squeeze the bottle. Observe the diver carefully as you are squeezing.
3. Test the single diver with no air in the 2L bottle and then test it with 2 or more inches of “head space” (air space at the top of the liquid water). Comment in question below.

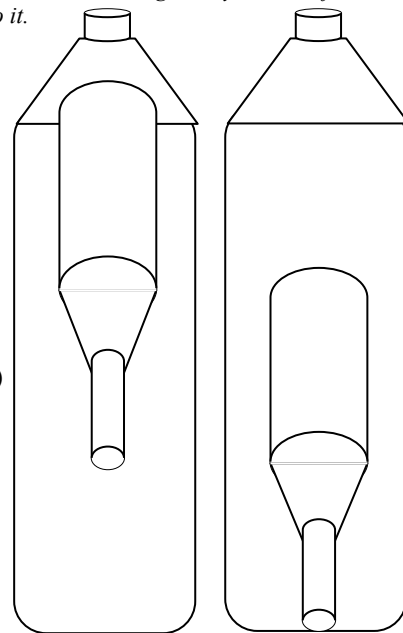
Take the challenge: (1 bonus pt)

Using all of the divers you got in class, see if you can arrange it so that you can squeeze the bottle with **ONLY ONE HAND** and get them to sink one diver at a time. Bring your set-up into class to demonstrate.

Post LAD Questions - This paper will be turned in.

1. It seems to me a plastic eye dropper with metal nuts attached should sink in water, what causes the diver to float? (1)

Yes, I know the diver and bottle are not proportioned correctly. I made the diver larger, so you could focus on changes to it.



2. Use a colored pencil to add to the diagrams to the right to help EXPLAIN WHY the Cartesian Divers are diving. (1)
 - When squeezing on the bottle observe the bubble inside the dropper and explain what causes the diver to sink? (In your explanation, you must use the words: mass, volume, density, pressure, compressible, not compressible and more in your explanation.) (3)

3. Does having no head in the 2 L bottle space make it easier or harder to cause your diver to sink. Suggest an explanation. (1)

4. Do some research to find out why the name “Cartesian” Divers. (1)

5. Do a search on the web asking: “How do submarines work?” and make a comparison between how submarines and the Cartesian Divers work. Sketches would be a good idea. Use the back to answer.