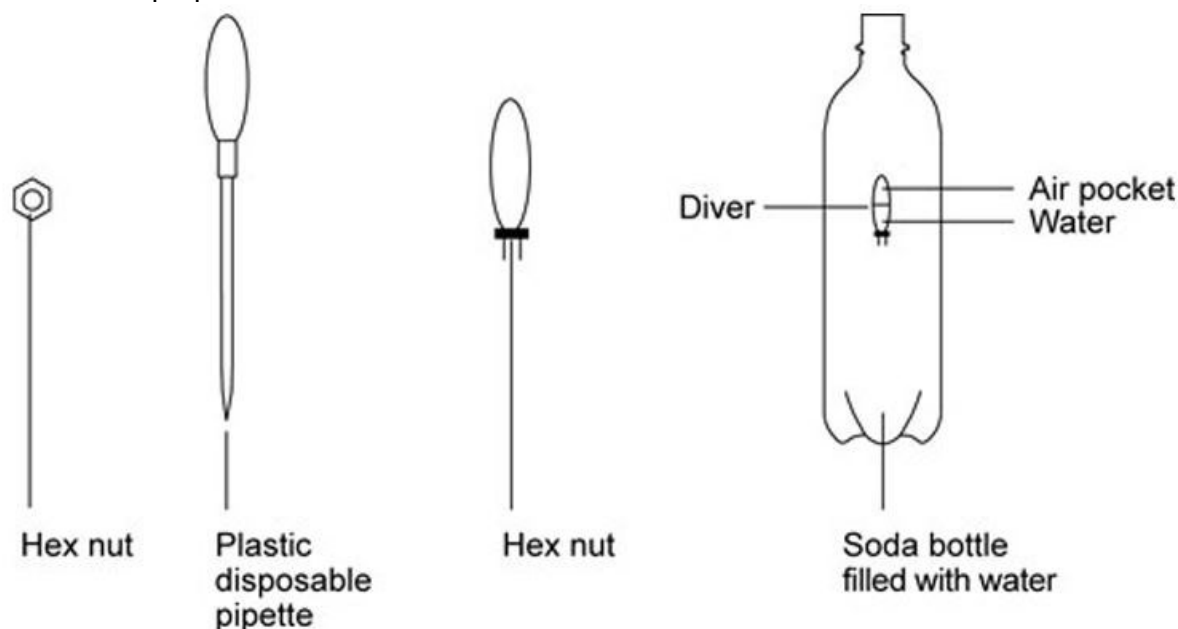


## A Cartesian diver – student sheet

### Introduction

This is an experiment named after René Descartes (1596–1650). Descartes was a French scientist and philosopher. The Cartesian diver can be used to illustrate the behaviour of gases and liquids when compressed. In this experiment a Cartesian diver is constructed and some of the properties observed.



### Equipment

#### Apparatus

- Plastic disposable pipette, 5 cm<sup>3</sup>
- Hex nut, 11 mm across face to face
- Clear plastic soft drink bottle, 2 dm<sup>3</sup>, 1.5 dm<sup>3</sup> or 1 dm<sup>3</sup>
- Plastic beaker, 250 cm<sup>3</sup>
- Scissors

#### Chemicals

- Water

#### Health, safety and technical notes

- Read our standard health and safety guidance here <https://rsc.li/3OHL4ob>
- Water may spill, clean any spillages.

#### Procedure

1. Screw the hex nut onto the base of the pipette until it is held tightly in place.
2. Cut off all but 1 cm of the pipette stem. (This is the diver.)
3. Place the diver in a beaker of water. Squeeze the bulb of the pipette to force air out and release to allow water up into the diver. Repeat this until the diver is about half full of water.
4. If adjusted properly, the diver should barely float in the water. If it sinks, squeeze a little water out.

5. Carefully transfer the diver to the soft drink bottle that is full to the brim with water. Take care not to lose water from the diver. Place the cap on the bottle.
6. Use both hands and squeeze the bottle.
7. Watch the diver sink when the bottle is squeezed, or float when pressure is released.

### Questions

1. What happens to the air in the diver when the bottle is squeezed?
2. Why does the air behave in this way?
3. Write a sentence that explains how the Cartesian diver works