STUDENT SHEET

Submarine buoyancy activity

Details

What you need

- Clear 1 to 1.5 liter plastic soda bottle
- Pen lid (without a hole in the top)
- Some modeling clay or poster putty such as Blu-Tack

Safety and Guidance

Precautions

Always ask an adult to help get your pen lid out of the bottle.

Tell an adult if you spill any water on the table or floor and wait for it be cleared up before continuing.

Activity steps

1. Remove any labels from your bottle.
2. Place the bottle in a sink or on a tray as there may be small spills and fill the bottle to the very top with water.
3. Cover any hole in the top of the pend lid with blu-tack. Then start add a small piece to the end of the clip.
4. Put the pen lid into the bottle, modelling clay end first. It should just barely float at the top of the bottle.
5. If the lid floats too much, keep on adding small pieces of blu-tack to the pen lid, and check to see if the top of the pen is level with the top of the bottle.
6. Top up the water bottle right to the top if needed. Then screw on the bottle cap nice and tight.
7. Now, to see if you can make your pen lid submarine rise and fall. Squeeze the sides of the bottle hard. This should make the lid sink. If you stop squeezing, the lid will rise again.
8. Your challenge is to apply just the right amount of pressure to make the pen lid float in the middle of the bottle.

What is happening?

- Why do you think that the pen lid submarine sinks when you press the sides and rises when you release?
- What can you remember from the parts of the submarine you looked at?
- Which part helped the submarine rise and fall?