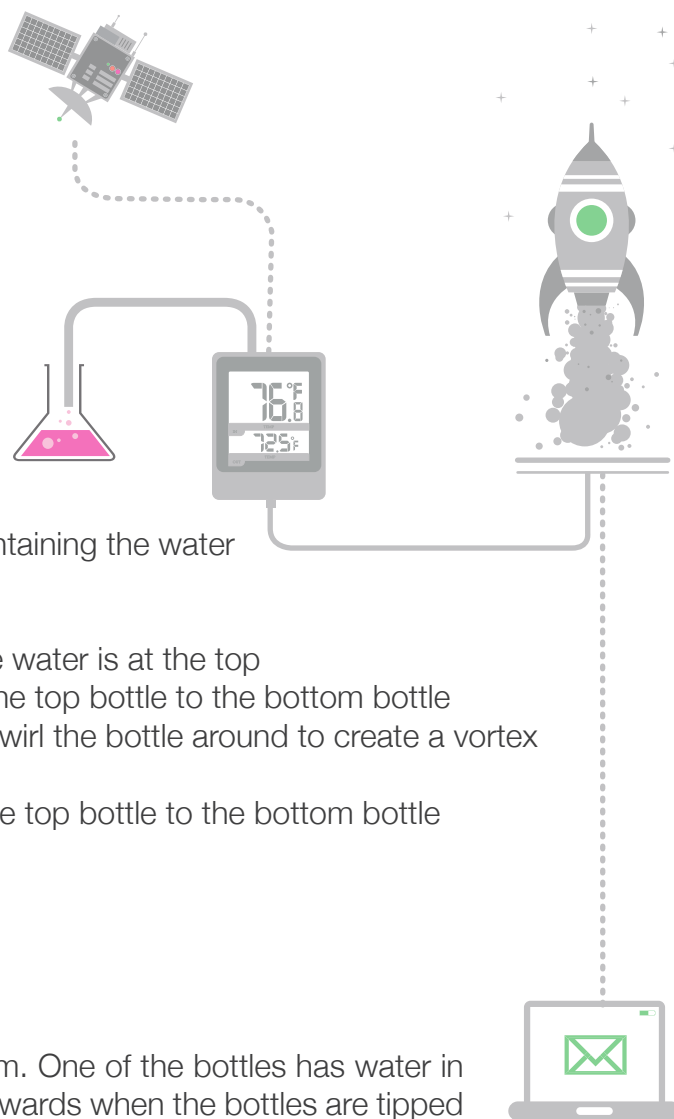


Equipment

- 2 x 2L Empty pop bottle
- Water
- Duct tape
- 'Vortex in a bottle' connector

Method

1. ½ fill one of the empty pop bottles with water
2. Add food colouring if you want coloured water
3. Fit one of the connectors onto the top of the bottle containing the water
4. Push the 2nd (empty) bottle onto the connector
5. Wrap duct tape around the connection
6. Tip the bottle upside down so the bottle containing the water is at the top
7. Time how long it takes for all the water to move from the top bottle to the bottom bottle
8. Now turn the bottle upside down again, but this time swirl the bottle around to create a vortex inside the top bottle
9. Time how long it takes for all the water to pass from the top bottle to the bottom bottle
10. Was there a difference?



The Science

The bottles are connected but there is a hole between them. One of the bottles has water in it. There is air above this. Gravity makes the water go downwards when the bottles are tipped up. When you tip without swirling, the air and water 'fight' to move through the gap, slowing down the passage of water. When a vortex is formed, the water swirls around the outside as it goes down, allowing the air to move through the middle. It looks a bit like a small tornado – you've probably seen something similar in the plughole of a bath!

Health and Safety

Ensure any spillages are immediately cleared up. Encourage the children to just swirl the vortex, keeping their hands firmly around the join of the 2 bottles to prevent spillages.

