

Make a square bubble

Use science to change the shape of bubbles.

What you need

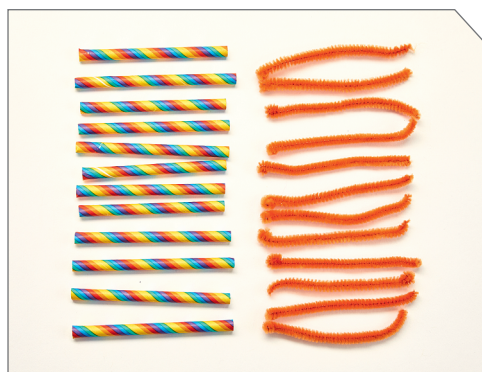
- Scissors
- 6 pipe cleaners
- 6 paper straws
- Large bowl
- 7 litres water
- 60ml washing-up liquid

TOP TIP

Using a bubble-blowing wand, blow a bubble and let it drop into the centre of your square bubble to see it form another square bubble within it.

How does it work?

Water molecules like to stick to each other – the hydrogen atoms in one molecule are attracted to the oxygen atom in another. On its own, water cannot make bubbles because this attraction between molecules is so strong it makes them collapse – an effect called surface tension. Adding soap molecules from washing-up liquid weakens the attraction between water molecules and allows bubbles to form around pockets of air. Because the liquid molecules still want to stick together, they usually form a sphere, the shape with the smallest surface area. When you use the cube frame, though, the liquid molecules stick to both themselves and to the frame. To connect across the shortest distance, they now make diagonal lines straight to the centre, forming a square bubble.



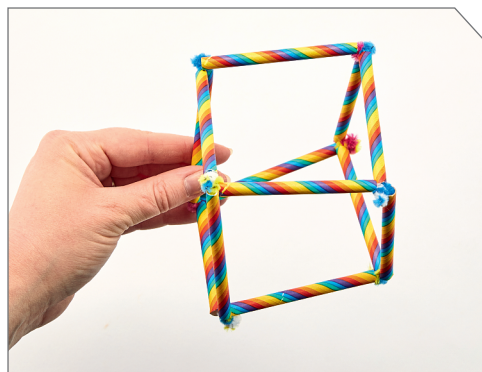
1 Cut the six pipe cleaners and six straws in half. You should have 12 pieces of each.



2 Take three pieces of pipe cleaner and twist the ends together. Fan them out into a triangle. Repeat until you have four triangle shapes.



3 Slide a straw over the end of each piece of pipe cleaner. Make sure there is some pipe cleaner poking through – trim the straw if you need to.



4 Now, build a cube by twisting together the exposed ends of pipe cleaners from separate triangles.



5 In the large bowl, mix the water and the washing-up liquid. Gently stir the soapy mixture.



6 Dip the cube into the mixture, then holding two sides, slowly take it out again. A square bubble should have formed in the middle.