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Make an ink-jet boat

Use the magic of science to propel this leaf around a water tray.

What you need

- Leaves (a pointed shape works best)
- Ballpoint pen
- Scissors or pliers
- A tray or plate
- Water



How does it work?

The effect of a jet-powered boat leaving behind a trail of ink reveals an invisible secret about water. Molecules in water are attracted to each other, which gives the surface a certain stiffness. This so-called surface tension is the reason why some insects, such as pond skippers, can walk on water. In a ballpoint pen, coloured dye is dissolved in an oily substance to make the ink. When the ink enters the water, it reduces the attraction between water molecules, which propels the leaf forward. You can see this in action in this video tinyurl.com/SN-boat



1 Find a flat, pointed leaf. Remove the ink tube from a ballpoint pen and ask an adult to detach the end using scissors or pliers.



2 Squeeze the tube (or blow through the other end) to force out the ink. Dab a few ink drops onto the base and sides of the leaf.



3 Fill a container with water and place your leaf gently on the surface, ink-side up. The leaf should motor off, leaving a coloured trail behind it.