ENGINEERING CHALLENGE

16

BUILD A COMPASS

THE JAMES DYSON FOUNDATION

BUILD A COMPASS

ENGINEERING CHALLENGE **16**

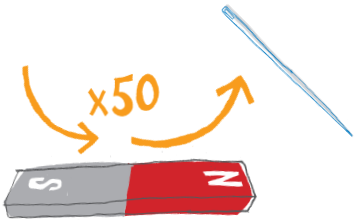
Designed by Adam,
Design engineer at Dyson

The brief

Build a compass.

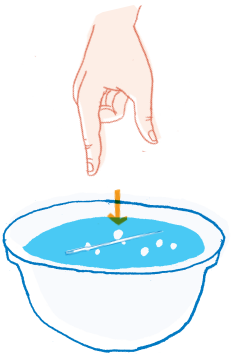
The method

1. Fill the bowl with water.
2. Magnetise the needle by stroking it over the bar magnet about 50 times. Make sure the needle is orientated with the needle pointing to the north of the bar magnet on each stroke.
3. Drop the needle onto the surface of the water – from as close as you can – to let it rest on the surface tension.



Materials

- Water
- Straight bar magnet
- Steel needle
- A bowl



How does it work?

Once the needle is magnetised it naturally wants to align with the Earth's stronger magnetic field. This field, called the magnetosphere, is created by electrical currents that are generated by a churning molten iron core deep inside the planet.

The Earth acts as if it has a bar magnet running through it with the magnet's south pole located near the planet's geographic north. Since opposites attract, the north pole of a magnetised needle is attracted to it.