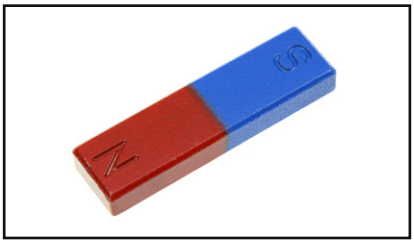
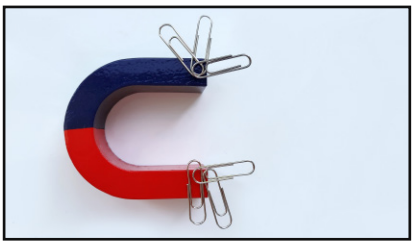
Magnets and magnetic forces

What is a magnet?

Have you ever played with fridge magnets or seen a magnet holding a note on a metal door? Magnets are special objects that can pull certain things, especially some metals, towards them. They are used in many places, from toys to computers!



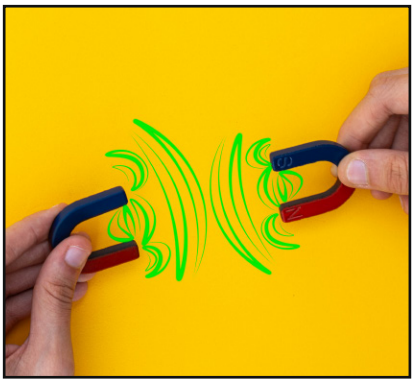


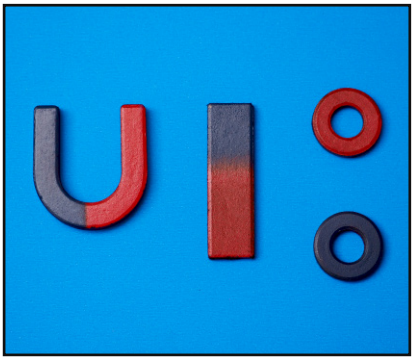
How magnets push and pull

Magnets have a power called magnetic force. This force can make things move without touching them. There are two main types of forces that magnets can do: they can attract (pull things towards them) or repel (push things away).

Attract and repel: What do these words mean?

When a magnet attracts something, it pulls it closer. For example, if you hold a paper clip near a magnet, the paper clip moves towards the magnet and 'sticks' to it. Here, 'stick' means the object stays attached to the magnet on its own, without you holding it. If you use two magnets and try to push the same ends together, you might feel them pushing away from each other. This is called repelling. Magnets have two ends called poles – a north pole and a south pole. Opposite poles attract each other, but the same poles repel.





Types of magnets

There are different shapes and types of magnets:

- **bar magnet** - shaped like a stick or bar
- **horseshoe magnet** - shaped like a letter 'U', it looks a bit like a horseshoe
- **ring magnet** - round like a doughnut, with a hole in the middle
- **button magnet** - small and round like a button

All these magnets can attract and repel, but their shapes make them useful for different jobs.

Magnetic materials

Not everything will 'stick' to a magnet. Only some materials are magnetic.
The most important magnetic metals are:
Iron: This is the most common magnetic metal, found in many everyday objects like paper clips and nails.
Steel: Steel is mostly made of iron, so it is also magnetic. Many tools, screws, and some coins are made of steel and 'stick' to magnets.
Nickel: Nickel is a shiny silver metal, sometimes found in coins or used to coat other metals. It is magnetic too.
Cobalt: Cobalt is a hard, grey metal used in some batteries and magnets. It is also magnetic.



Magnets and magnetic forces



Non-magnetic materials

Some things never stick to magnets. These are called non-magnetic materials. Examples are wood, plastic, rubber, paper, and most other metals like aluminium, gold, silver, and copper. So, a magnet will not pick up a wooden pencil or a plastic ruler!

Magnetic and non-magnetic metals

Metal	Magnetic?	Will it stick to a magnet?
iron	yes	yes
steel	yes (because of iron)	yes
nickel	yes	yes
cobalt	yes	yes
aluminium	no	no
copper	no	no
gold	no	no
silver	no	no

Why don't fizzy drink cans and aluminium foil stick to magnets?

Fizzy drink cans and aluminium foil are both made from aluminium. Aluminium is a metal, but it is not magnetic. This means magnets do not attract aluminium, so these items will not "stick" to a magnet. Even though they are shiny and metallic, only certain metals—like iron, steel, nickel, and cobalt—are magnetic. That's why when you try to pick up a fizzy drink can or a piece of aluminium foil with a magnet, nothing happens!





Did you know?

Even though we call some coins 'copper coins,' most modern coins that look like copper are not actually made from pure copper anymore. Instead, they are often made from steel or another metal with just a thin coating of copper on the outside. This means some coins may actually stick to a magnet if they have a steel centre, but pure copper coins will not.