MAGNETISM FOR KIDS

How to make an electromagnet

Electromagnets are created using electricity and a magnetic material such as iron, an iron nail is perfect for this example.

When electricity passes through a copper wire it creates a magnetic field around the wire. By winding a coil of wire around an iron core you can increase the strength of the magnetic field produced and create an electromagnet.

Unlike permanent magnets, an electromagnet's magnetism can be turned off by removing the electricity or battery.

You can make an electromagnet from everyday objects, you don't need to be a scientist or an engineer! All you need is the following:

- A length of copper wire
- A regular 9-volt battery
- A large iron nail
- A box of paperclips

Step one

Take the copper wire and wind it around the nail starting at its head. You will need to leave enough wire to attach the two ends to the battery.

Step two

Attach one end of the wire to the positive battery connector and the other to the negative battery connector.

Step three

Sprinkle some paperclips on to the desk or table then move the nail assembly towards the paper clips and see how many it can pick up. Congratulations, you have created an electromagnet!

To increase the strength of the electromagnet you can use a bigger battery or place more coils around the nail.

Try doubling the number of times the wire coils round the nail and try again. How many paperclips can you pick up now? You could count the number of coils and number of paperclips in the table below.

Number of coils	Number of nails
10	
12	
14	
16	
18	
20	
22	
24	