SUBJECT: Science

UNIT: Y8 Electromagnets

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Key Vocabulary

Magnet
Contains a north and south pole

Attraction
Opposite poles attract

Repulsion
Like poles repel

Electromagnet
Can be turned on and off

Core
Centre of an electromagnet

Solenoid
Contains wire with current flowing through it

Magnetic materials
Iron (and steel), Cobalt and Nickel

Magnets
A magnet has two magnetic poles- s north seeking pole and a south seeking pole.

The end that points towards the magnet north pole is called the north seeking pole.

The other end of the magnet is called the south seeking pole.

Attraction and repulsion
Opposite poles attract.
Like poles repel.

Magnetic fields
There is a magnetic field around a magnet.

The fields are strongest at the poles.

The magnetic field always runs from north to south pole.

Iron filings or a compass can be used to detect the field lines.

Electromagnet
A solenoid with a current moving through it.

Electromagnets
A non-permanent magnet turned on and off by controlling the current through it.

They usually have a magnetic material in the centre called the core.

This makes the electromagnet stronger. Most cores are made from iron.

Circuit breakers

When a large current flows in a wire around the electromagnet the electric field is strong enough to attract the iron catch. The catch moves and breaks the circuit.

Loudspeaker

The coil becomes an electromagnet that changes in strength.

Ambitious Vocabulary

Electromagnet

Attraction

Testing electromagnets

You can turn an electromagnet on and off by turning the current on and off.

You can investigate the strength of an electromagnet by changing:

- Current
- Number of turns of coil
- Metal used for the core

You can determine the strength by counting how many paper clips it can pick up.

Uses of electromagnets

- Scap yards
- Electric doorbells
- Relays
- Circuit breakers
- Generators
- Motors
- Loudspeakers
- MRI scanners
- Particle accelerators
- Magnetic locks
- MAGLEV trains

Electric bells

The electromagnet attracts the iron armature.
The circuit breaks.
The coil and core are no longer magnetic.
Now the circuit is complete and the bell will ring.