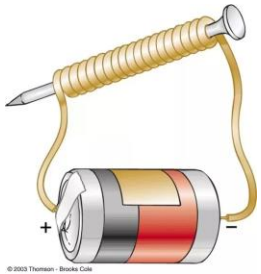


Electromagnets

KNOW IT

I know the symbols for a lamp, wire, switch, voltmeter, ammeter and cell.

I can set up a circuit and measure the current

I can connect a voltmeter in parallel and measure the potential difference (voltage)

I can describe what happens to the current if the potential difference (voltage) is increased

I can build an electromagnet

I can describe ways to make an electromagnet stronger

I can carry out an investigation to test the strength of an electromagnet.

I can write a hypothesis.

I can identify the independent variable, dependent variable and control variables in my investigation.

I can identify electromagnets in devices such as door bells.

I can describe how an electromagnetic relay works

LINK IT

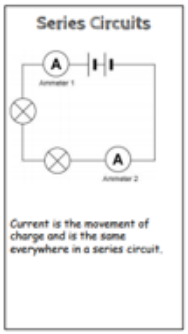
- You will have learnt how to use scientific equipment to collect data
- You will have leaned to write a hypothesis to test
- You will have learnt how to record your findings in a table and in a simple graph
- You will have learnt how to analyse your findings to draw conclusions

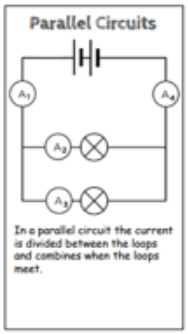
PROVE IT

- Complete enquiry including variables, methodology and conclusions
- Plotting accurate and well presented distance time graphs
- End of unit test

SAY IT

VOCABULARY	DEFINITION
current	Current is the flow of electrons (charge). It is measured with an ammeter in amps, A.
Potential difference	A measure of the energy carried by the current. Think of it as how hard the battery is pushing the current.
Ammeter	A device to measure electric current in amps, A. Must be connected in series.
voltmeter	A device to measure potential difference (voltage) in volts, V. Must be connected in parallel.
electromagnet	Magnetic field produced by an eclectic current flowing through a coil of wire. An iron core is usually used
Iron core	Pure iron with a coil of wire wrapped around it. Pure iron forms temporary magnet when current flows through the wire. It stops being magnetic when you switch off the current
Permanent magnet	When magnetized – steel becomes a permanent magnet. Keeping its magnetic field for ever unless you hit it or heat it.
Temporary magnet	Pure iron forms temporary magnet when current flows through the wire. It stops being magnetic when you switch off the current
hypothesis	A scientific ide that you can test with an experiment to see if it is true or not.





6. Electromagnets KO

Electromagnet: A non-permanent magnet turned on and offby controlling the current through it.

Solenoid: Wire wound into a tight coil, part of anelectromagnet.

Core: Soft iron metal which the solenoid is wrapped around.

Potential difference (voltage) The amount of energy shifted from the battery to the moving charge (electrons) or from the charge to the circuit components, measured in volts

Negatively Charged: An object that has gained electrons as a result of the charging process.

Positively Charged: An object that has lost electrons as a result of the charging process.

Electrons: Tiny particles which are part of atoms and carry a negative charge. Charged up: When materials are rubbed together electrons move from one surface to another.

Current: Flow of electric charge, measured in amperes (A).

In series: If all the components in a circuit are on the same loop.

In parallel: If the components are on different loops of the circuit.

Securing

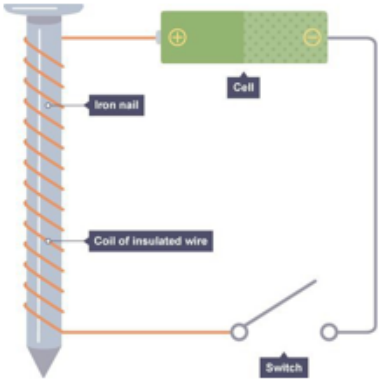
To be securing this topic you need to be able to:

- Use a diagram to explain how an electromagnet can be made and how to change its strength.
- Explain the choice of electromagnets or permanent magnets for a device in terms of their properties.

Mastering

To be mastering this topic you need to be able to:

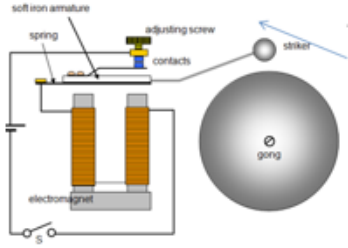
- Extend Critique the design of a device using an electromagnet and suggest improvements.
- Suggest how bells, circuit breakers and loudspeakers work, from diagrams.



You can build these at home

An **electromagnet** uses the principle that a current through a wire causes a magnetic field. Its strength depends on the current, the core and the number of coils in the solenoid.

Many devices use electromagnets. Here are a few



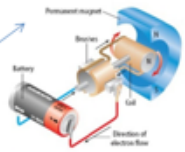
Electric bell

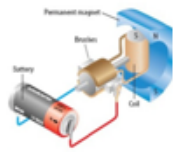
Electric motor

Loudspeaker

Circuit breaker

How does an electric motor work?





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