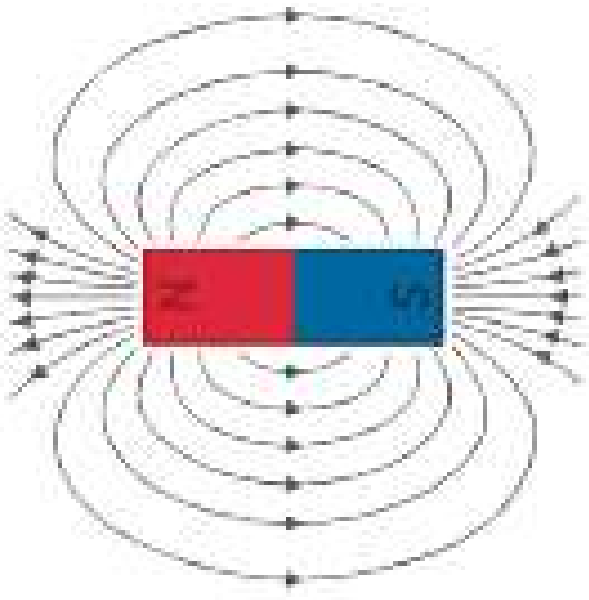
Knowledge organiser

Key word	Definition	Detail
Magnet	Materials attracted by magnets	The magnet uses a non-contact force to attract magnetic materials.
Magnetic field	Region of fore around a magnet	Field lines close together → strong field → large force. Field lines far apart → weak field → small force. Field/force is strongest at the poles. Arrows on field lines are drawn in the direction of north to south.
Permanent	A magnet that produces its own magnetic field	Will repel or attract other magnets. Will attract magnetic materials.
Induced	A temporary magnet	Becomes a magnet when placed in a magnetic field.



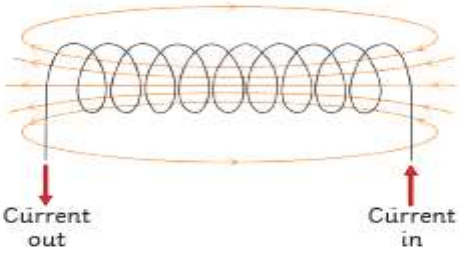
Electromagnetism

A circular **magnetic field** is produced when a current is passed through a conducting wire. This produces an **induced magnet**.

Switching off the current causes the magnetism to be lost.

The strength of the magnetic field can be increased by increasing the current flowing through the wire. The strength of the magnetic field is stronger closer to the wire.

Coiling the wire to form a **solenoid** will also increase the strength of the magnetic field. The strength of the magnetic field created by a solenoid is strong and uniform throughout.



To increase the strength of the magnetic field around a solenoid you can...

- add an iron core;
- increase the number of coils in the wire;
- increase the current passing through the wire.

An **electromagnet** is a solenoid with an iron core. Electromagnets are **induced magnets** and can be turned on and off.

Electric motors, loudspeakers, electric bells and remotely controlled door locks all use **electromagnets**.