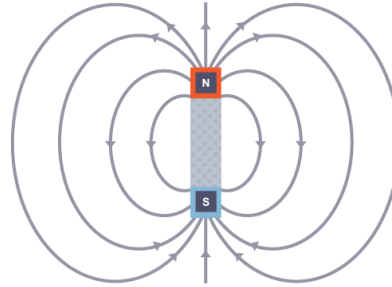


KNOWLEDGE ORGANISER
BIG IDEA: ELECTROMAGNETS
TOPIC: MAGNETISM

Key Word	Definition
Magnetic force	Non-contact force from a magnet on a magnetic material.
Permanent magnet	An object that is magnetic all of the time.
Magnetic poles	The ends of a magnetic field, called north-seeking (N) and south-seeking poles (S).
Electromagnet	A non-permanent magnet turned on and off by controlling the current through it.
Solenoid	Wire wound into a tight coil, part of an electromagnet
Core	Soft iron metal which the solenoid is wrapped around.

Magnetic materials, electromagnets and the Earth create magnetic fields which can be described by drawing field lines to show the strength and direction. The stronger the magnet, and the smaller the distance from it, the greater the force a magnetic object in the field experiences. Field lines flow from the north-seeking pole to the south-seeking pole.

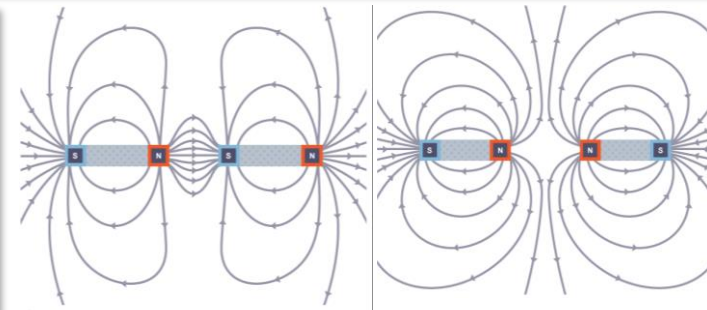


In the diagram, note that:

- each field line has an arrowhead on it
- the field lines come out of the north pole and go into the south pole
- the field lines are more concentrated at the poles

The magnetic field is strongest at the poles, where the field lines are most concentrated.

- Magnetism is a force experienced by certain metals.
- There are two poles of magnetism - north and south.
- Two 'like' magnetic poles repel and two 'unlike' magnetic poles attract.

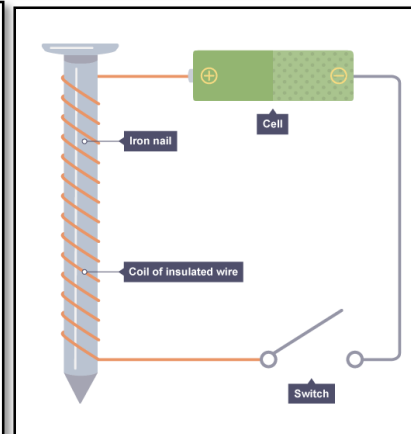


An electromagnet uses the principle that a current through a wire causes a magnetic field.

Its strength depends on the current, the core and the number of coils in the solenoid.

You can make an electromagnet stronger by doing these things:

- wrapping the coil around a piece of iron (such as an iron nail)
- adding more turns to the coil
- increasing the current flowing through the coil



The magnetic force of an electromagnet decreases with distance.