

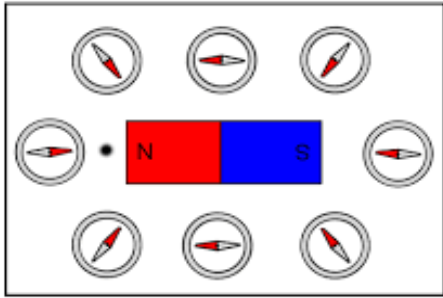
Y9 - Magnetism

Magnetic fields

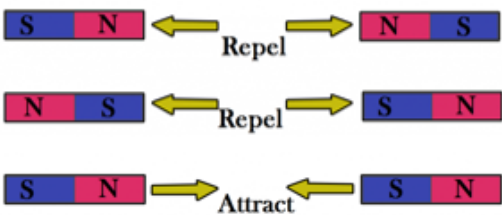
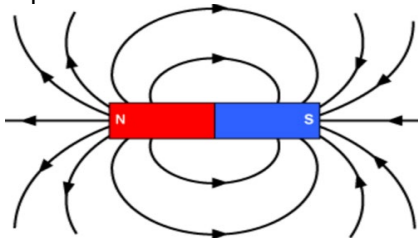
Magnets have a magnetic field around them.

Magnets can attract objects made of magnetic materials. The magnetic materials are iron, nickel and cobalt.

The direction of a magnetic field always points from the north pole to the south pole.

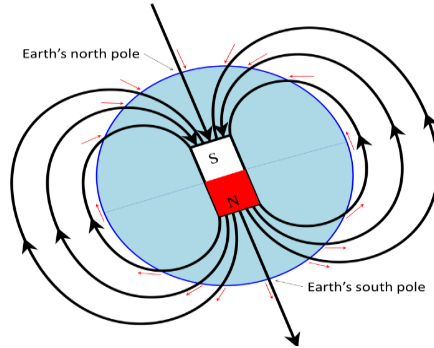


The magnetic field is strongest close to the poles.



Earth's magnetic Field

The Earth's magnetic field causes the north side of a compass needle to point to 'magnetic north' (it is 'north seeking')



Permanent and Induced Magnets

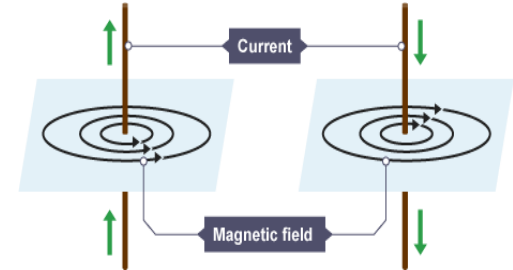
A Permanent magnet produces its own magnetic field. Example – bar magnet.

An induced magnet is a material that becomes a magnet when it is placed in a magnetic field. Example – Paperclips become induced magnets when they are attached to a magnet.



Electromagnets

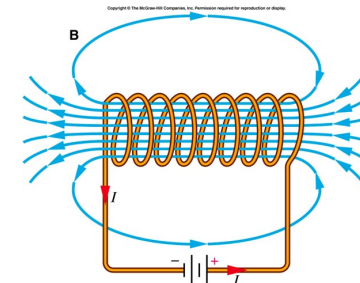
A wire with an electric current flowing through it has a magnetic field around it. The strength of the field increases if the current increases. The direction of the field changes if the direction of the current changes.



When a wire is wrapped into a coil, the magnetic field is in a similar shape to the magnetic field of a bar magnet.

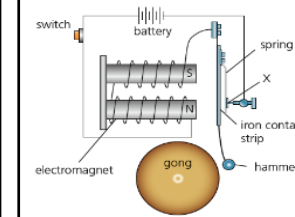
You can increase the strength of an electromagnet by:

- increasing the number of coils of wire,
- increasing the current in the wire,
- using a magnetic material as a core inside the coil of wire



Use of electromagnets

Door bells



Electric motors

if a wire carrying a current is placed in a magnetic field it experiences a force.

