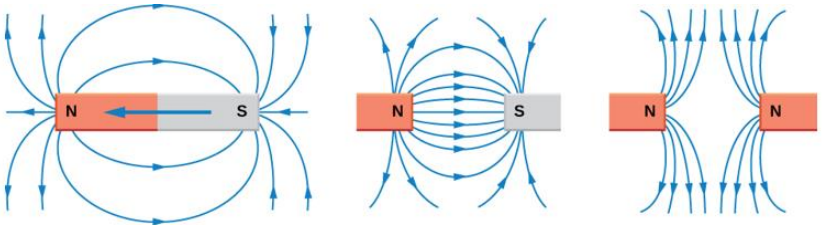
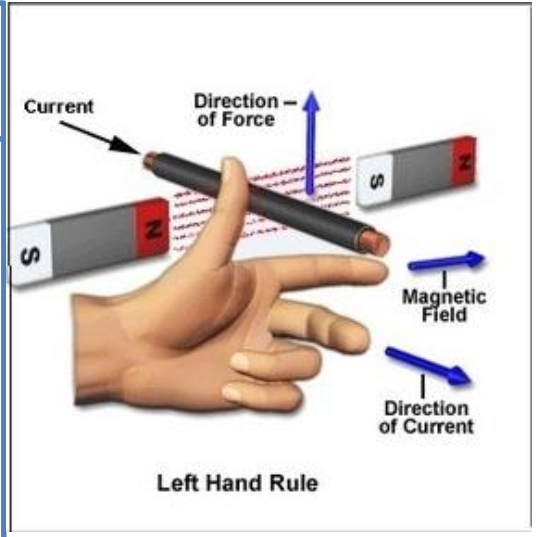
Year 11 – Paper 2 - Physics Knowledge Organiser – Magnetism and electromagnetism

Permanent Magnets

These are usually bar magnets, they have constantly got a magnetic filed that goes from North to South. Like poles repel and opposite poles attract.





Flemings Left Hand Rule

Alexander Fleming was a scientist who worked a lot on electromagnetic induction. He discovered that if there is a constant magnetic field and a wire with a current running through it then movement will be induced in the wire in a predictable way. You can find out what way the wire will use by using his Left Hand Rule. You can see in the diagram that each finger represents a apart of the puzzle. Easily remembered by

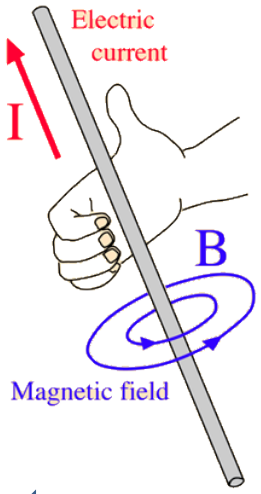
First Finger = **F**ield

se**C**ond Finger = **C**urrent

thu**M**b = **M**ovement

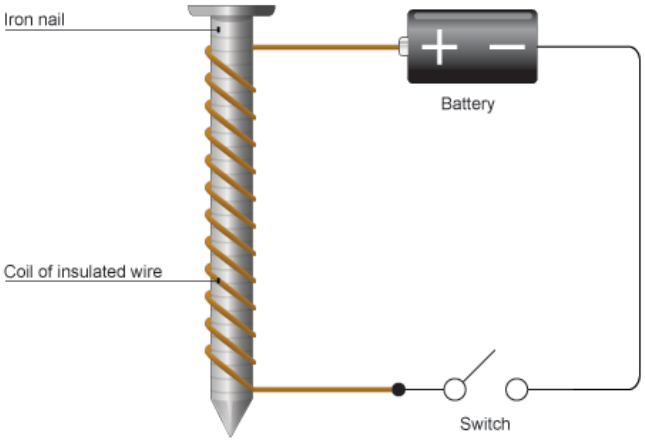
Electromagnetic induction

If a current is passed through a wire then this creates magnetic fields around the wire. You can figure out the direction of the magnetic field using the method shown to the right.



Uses of Flemings left Hand Rule

Flemings left hand rule has many applications in your day to day life. For example its how you speakers work, how the fan in your hair dryer works or how a drill turns.



Uses of Electromagnets

Electromagnets are incredibly useful, you will find then in your door bell, in the locks around the school, they are used to pick up junk in a scrap yard and will be in your phone and computer.

Electromagnetics

You can make a temporary magnet using equipment like that shown to the left.

If a current is run through a wire that is in a coil then a magnetic field will appear around it in the same shape as that of a bar magnet. If you open the switch it will stop being magnetic. The strength of this field can be increased by,

1. Adding a soft iron core (like a nail)
2. Increasing the number of turns of wire
3. Increasing the size of the current flowing through the wire.