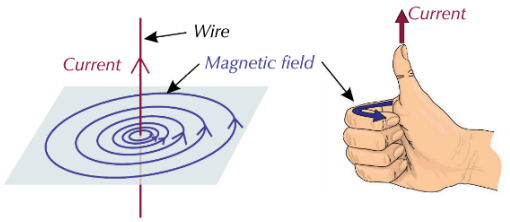
Physics Crib Sheet: Topic 7

Electromagnetism

When a current flows through a wire a magnetic field is created around the wire

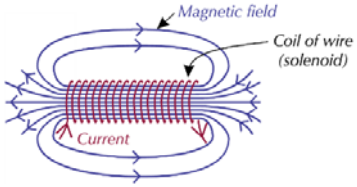
The right-hand thumb rule

Using your right hand, point your thumb in the direction of the current, and curl your fingers. The direction of your fingers is the direction of the field.



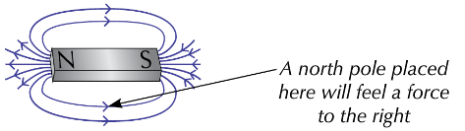
The strength of the magnetic field is dependent on the size of the current and the distance from the wire.

To increase the strength of a magnetic field a wire can be wrapped into a coil. This is known as a **solenoid.**



Electromagnets are useful because they are easy to turn on and off or because they can create a varying force.

This is the magnetic field around a bar magnet. It's strongest at the north and south poles, where the field lines are closest together.



A magnetic field is a region where magnets, magnetic materials (like iron and steel), and also wires carrying currents, experience a force acting on them.

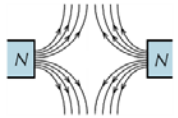


Figure 2: *The magnetic field between two like poles repelling each other.*

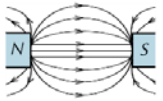


Figure 3: *The magnetic field between two unlike poles attracting each other.*

There are two types of magnets. **Permanent** magnets produce their own magnetic field. **Induced** magnets are metals that turn into magnets when they are in a magnetic field.