

## Magnets and its Magnetic Fields

### Magnets:

“An object which is capable of producing magnetic field and attracting unlike poles and repelling like poles.”



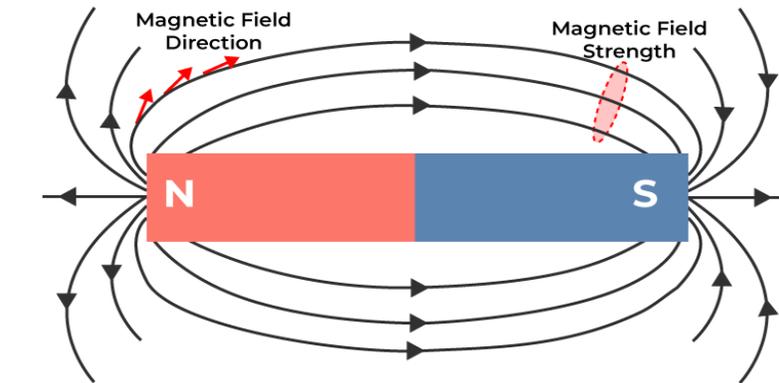
### Magnetic Fields

► All magnets are surrounded by a **magnetic field**. A magnetic field is defined as:

“The region around a magnet where a force acts on another magnet or on a magnetic material (such as iron, steel, cobalt and nickel)”

#### ► Magnetic Field Lines

- Magnetic field lines are used to represent the **strength** and **direction** of a magnetic field
- The direction of the magnetic field is shown using **arrows**
- The **strength** of the magnetic field is shown by the **spacing** of the magnetic field lines
  - a) If the magnetic field lines are **close together** then the magnetic field will be **strong**.
  - b) If the magnetic field lines are **far apart** then the magnetic field will be **weak**



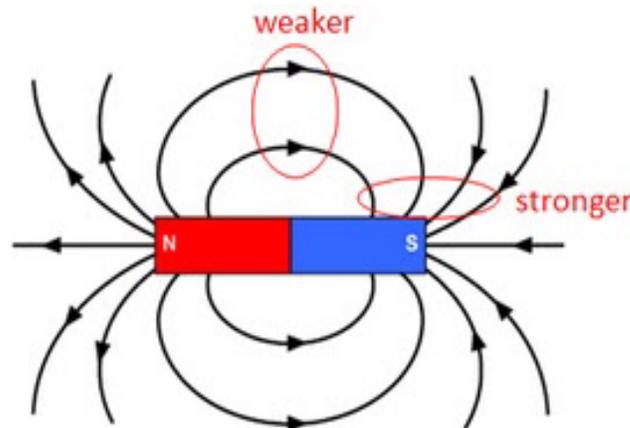
► **Rules for drawing magnetic field lines**

• There are some rules which must be followed when drawing magnetic field lines.  
Magnetic field lines:

- Always go **from north to south** (indicated by an arrow midway along the line)
- Must **never touch or cross** other field lines

► **Magnetic Field around a Bar Magnet**

- The magnetic field is **strongest at the poles** where the magnetic field lines are **closest** together
- The magnetic field becomes **weaker as the distance from the magnet increases**



## P7: Magnetism and Electromagnetism

### ► Magnetic field lines for attracting and repelling bar magnets

- Two bar magnets can repel or attract, the field lines will look slightly different for each:

a) opposite poles attract each other. North attract south and vice versa.

b) same poles repel each other. South Pole repel South Pole and North Pole repel North Pole

- Therefore, the magnetic field lines around different configurations of two bar magnets will look like this

