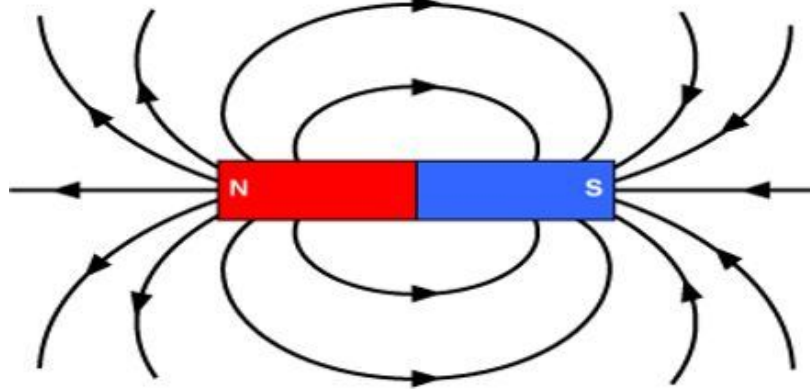
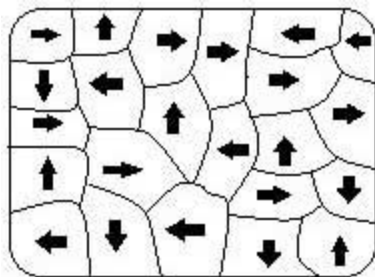


Magnets and Magnetism Notes

- **Ferromagnetic materials** - the stuff magnets are made of and attract
 - Contain iron, nickel, or cobalt
- Magnets can repel or attract other magnets
- Magnets naturally align with Earth's north pole
 - That's how a compass can tell you which way is North
- **Magnetism** - the force exerted by a magnet
 - It's a field force, not a contact force
 - Meaning it acts at a distance
- **Magnetic field** - a region where a magnetic force is exerted on electrical charges of ferromagnetic materials
 - They are represented by field lines just like electric field lines in the last unit
 - Lines flow from North to South
 - Even though it looks flat, it is 3D

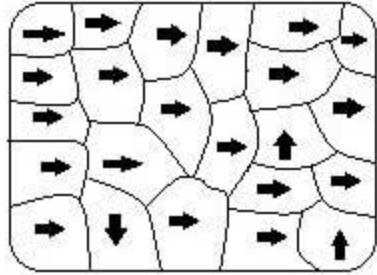


- **Magnetic domains** - microscopic areas of a ferromagnetic materials containing clusters of atoms that have magnetic fields aligned in the same direction
 - It's kind of like tiny magnets inside of a magnet



- Each of the arrows is a magnetic domain with its own charge (represented by the tiny chunks with the arrows)
- The big rectangle is your regular magnet
- The picture above is when they are left alone (unmagnetized)

- Watch what happens when you run a magnet over it:



- Now most of the magnetic domains are pointing in the same direction
 - Why?
 - Opposites attract and like charges repel
- **Permanent magnets** - magnets with magnetic domains that are set in their ways and hard to change
- **Temporary magnets** - magnets with magnetic domains that can change easily