Unit 1

Properties of Magnet

You know magnet remains steady in north-south direction. This characteristic of magnet is used to decide direction.

Observe the adjacent figure and answer the following questions :

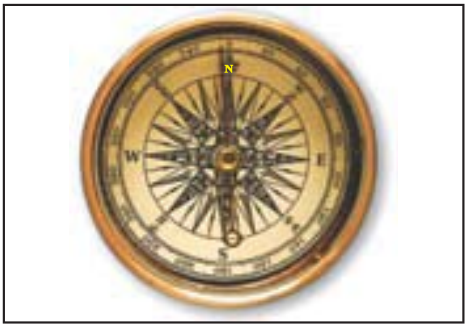
(1) Which instrument is shown in the figure ?

(2) Which type of magnet is used in it ?

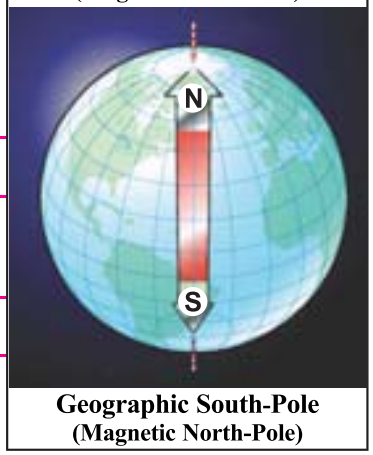
(3) What is represented by N-E-S-W ?

What is the use of this instrument ?

To decide direction compass is used. In it a magnetic needle is provided on the axis which can freely rotate it, it shows North-South directions on the dial of the compass N-S-E-W directions are shown. Get a compass and observe it. Two types of compasses are shown below :



- Observe the adjacent figure and answer the following questions :



(1) Which pole is upward on the sphere of the earth ?

(2) Which pole is downward on the sphere of the earth ?

(3) Which pole of the magnet is toward the North-pole of the earth ?

(4) Which pole of the magnet is towards the South-pole of the earth ?

Why does the freely hanged magnet on the earth, always becomes steady in North - South direction ?

Which magnetic pole is towards the geographic pole of earth ?

What is required ? A white paper, bar-magnet and iron dust

What to do ?

☞ Place bar-magnet on the table place white paper on it.

☞ Now spread the iron dust on the paper then slowly tapping it observe the iron dust.

- What is formed in the surrounding of the magnet ?

- Observe the curves on the paper and draw the same curves around the magnet given in the following figure :

The definite pattern formed in the surrounding of magnet are known as magnetic field lines. Where the magnetic field lines are closely spaced in this activity ?

What is required ? Magnet and iron pins

What to do ?

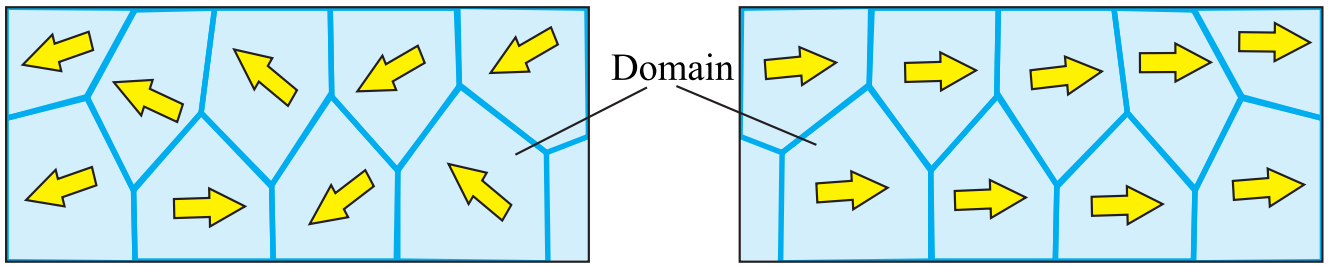
- ☞ Place the pins on the table.
- ☞ Now place the magnet at a distance from the pins on the table and slowly bring the magnet near the pins. Note that from which maximum distance, the pins are attracted towards magnet.
- ☞ Repeat this process two to three times.

- The space in which magnet can attract objects of iron, that space is called magnetic field of magnet.
- Repeat above activity by taking small and large magnet and note the observations.

- Are magnetic fields of both magnets same ?

- For each magnet magnetic fields are different.

Observe the domain of iron and magnet from the following figures and note it.



Position of domain in iron piece Position of domains in magnet

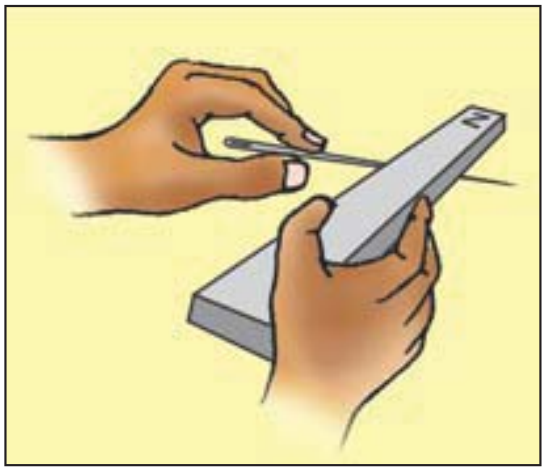
(1) What is the difference in domains of iron and magnet ?

Domains of magnet are arranged in the same direction so it behaves as magnet.

(2) Can iron piece be converted into magnet ?

What is required ? Needle, iron dust and bar magnet

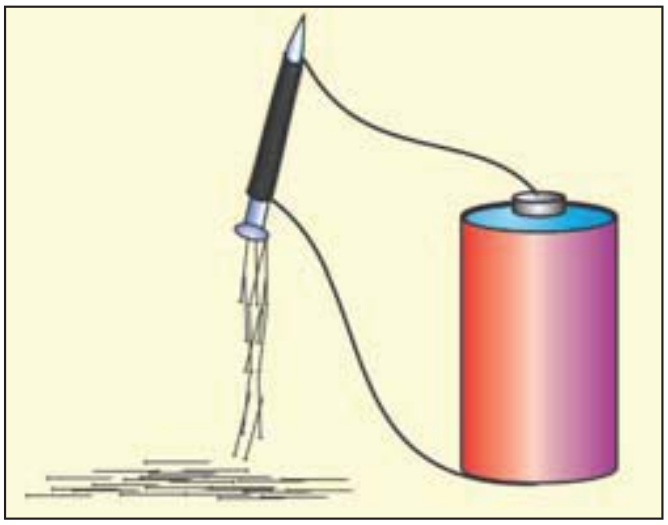
What to do ?



- ☞ Take a magnet.
- ☞ As show in figure rub that magnet with needle on one side.
- ☞ After rubbing for some time take that needle close to iron dust.
- ☞ What happens ?

How is the iron needle converted to a magnet ?

What is required ? Pins, insulated copper wire, nail and cell.



What to do ?

- ☞ Take some pins.
- ☞ As shown in figure wound the copper wire on the nail.
- ☞ As shown in figure connect two ends of copper wire with cell.
- ☞ Place the nail slightly above the pins.
- ☞ Observe the pins.

- ● Why are the pins attracted towards the nail ?

Why the magnetism is induced in the nail ?

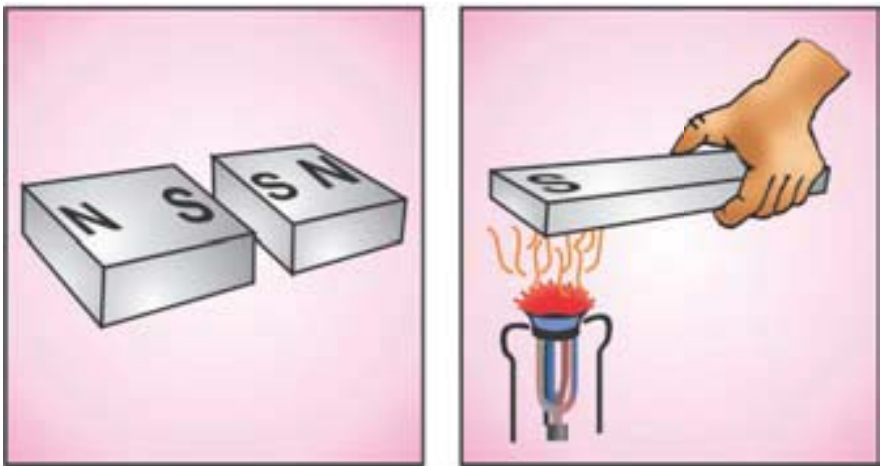
Now, disconnect one end of copper wire from the cell and observe the pins.

The magnet made in this way is called electromagnet.

Where the magnet is used in the items shown in following pictures ?

By discussion with your friends list the items in which magnet is used.

By observing following pictures, discuss the causes for vanish of magnetism of magnet and note it.



How does magnetism of magnet vanishes ?

Q.1. List the house-hold items in which magnet is used.

Q.2. Take a nail or pin and convert it in magnet.

Q.3. Take a nail and make electromagnet.