

### 13 Fun with Magnets (By: J. S. Mishra)

**Natural Magnet:** Magnetite is called natural magnet.

#### Uses of a Magnet:

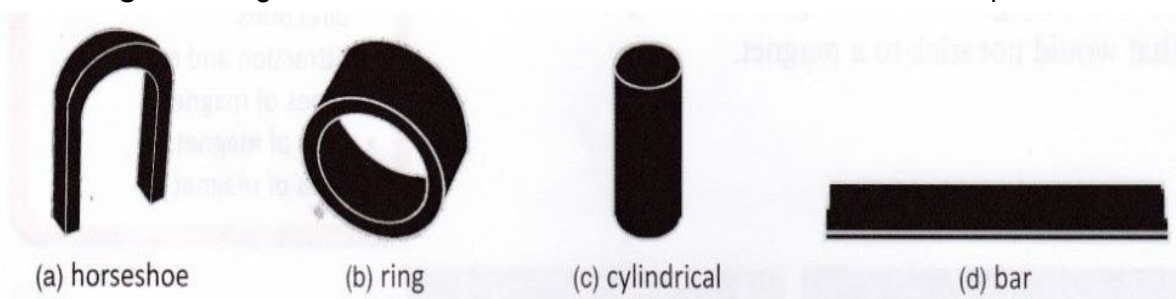
Magnets have several uses:

- ★ Credit cards, ATM cards, and identity cards have a strip of magnetic material that stores information.
- ★ Television and computer monitors use magnets.
- ★ Computer hard discs and audio and video cassettes have magnetic material that store information.
- ★ Magnets are used in picking up substances made of iron from scrapyards.

#### Discovery Of Magnets

According to a legend, the first magnet was discovered by a Greek shepherd named Magnes. It is said that the nails in his shoes and the iron tip of his staff got stuck to a large black rock on which he was standing. Greeks named this strange type of rock 'magnetite'. The Chinese also knew about magnets. Ancient Chinese sailors used magnets for navigation.

**Shapes of Magnets:** Magnets are made of different materials and in different shapes.



**Effect of a magnet on materials:** A magnet attracts certain materials, whereas some do not get attracted towards magnet.

**Magnetic materials:** The materials which get attracted towards the magnet are known as magnetic materials. Ex-iron, nickel, cobalt.

**Non-magnetic materials:** The materials which are not attracted towards the magnet are known as non-magnetic materials. Ex- leather, plastic, cloth, paper.

**Poles of the magnet:-** A magnet has two ends. These ends are known as poles of the magnet.

★ A magnet has two poles- (i) North pole and (ii) South pole.

**North pole:** When a magnet is suspended freely, one pole of the magnet always points towards the north. This is known as north-pole.

**South pole:** When a magnet is suspended freely, the end of a magnet points towards the south. This is known as south-pole.



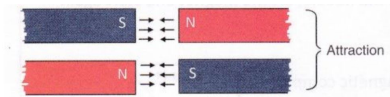
**Fig- Poles of bar magnet**

**Attraction between two poles:** Opposite poles of two magnets attract each other. It is called attraction.

★When unlike poles of the magnets (N-S or S-N) are brought close to each other, they attract. This is called attraction.

**South- North(N-S) - Attraction**

**North - South(S-N) -Attraction**

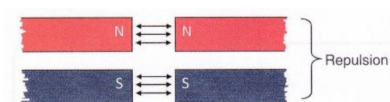


**Repulsion between two poles:** Similar poles of two magnets repel each other. It is called repulsion.

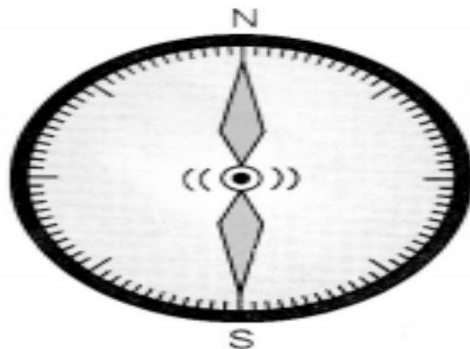
★When like poles of the magnets (N-N or S-S) are brought close to each other, they repel. This is called repulsion.

**South - South(S-S) - Repulsion**

**North - North(N-N)Repulsion**



**Compass(Magnetic Compass):** This is a small glass case containing a magnetised needle pivoted on a nail. The needle can rotate freely. Wherever it is kept, its needle always rests in north-south direction. Normally the north-pole of the needle is painted red or some other indication is given to identify north and south-poles. So using this needle, north and south can be identified.



**Magnetic compass**

**Using a Magnet To Find Directions:-**

Magnetic compass is used to find direction. In a magnetic compass, It has a small magnetic needle at its centre. This needle can rotate freely and always points in the Earth's North-South direction. Different directions (north, south, east, and west) are marked on the compass.

**Temporary magnets:** Magnets that retain their magnetic properties only for a short period of time are called temporary magnets.

★Temporary magnets are usually made of iron, cobalt, or nickel. These materials behave like magnets only when they are near a strong magnet. They quickly lose their magnetic property if the influence of the strong magnet is removed.

**Permanent magnets:** Magnets that retain their magnetic properties for a long period of time are called permanent magnets.

★Permanent magnets are made from mixtures of iron, cobalt, or nickel with other materials. These make strong magnets and retain their magnetic properties for a long time.

★Magnetic forces are the strongest at the poles of the magnet and weaker in the middle.

★Magnets can lose their properties if they are dropped from a height, hit with a hammer, heated, or stored in an improper manner.

### **Making your own Magnet:-**

The easiest way of making a magnet is by the stroking method. If we stroke an iron bar with one end (one pole) of a bar magnet repeatedly in the same direction, the iron bar becomes a magnet. Thus, we need two things to make a magnet: an iron bar (or an iron strip) and a bar magnet.

### **Steps to make own Magnet:-**

★Take a rectangular piece of iron. Place it on the table.

★Take a bar magnet and place one of its poles near one edge of the bar of iron. Without lifting the bar magnet, move it along the length of the iron bar till it reaches the other end.

★Lift the magnet and bring the pole to the same point of the iron bar from which we began. Move the magnet again along the iron bar in the same direction as we did before.

★Repeat this process about 30-40 times. The iron piece has become a bar magnet.

### **Care Of Magnets:-**

A magnet can lose its properties due to the following activities.

★Dropping from a height

★Hitting with a hammer

★Applying heat

★Improper storage can also cause loss of magnetic properties.

★Bar magnets should be stored in pairs, with Dropping from a height unlike poles alongside each other.

★A horseshoe magnet should be stored with a piece of soft iron kept across its poles.

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