BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

SUBJECT:-PHYSICS

CHAPTER:-FUN WITH MAGNETS

Week: 9th Nov. to 13th Nov. **Number of Blocks : 2/3**

TOPIC: FUN WITH MAGNETS

GUIDELINES FOR STUDENTS

Dear Students

- There is only **1 Assignment**.
  - Assignment 2: Based on Sub topics given below.
- Attempt the assignment in Science notebook.
- **Video links** have been provided for better understanding of the concept through visuals. Watch the videos carefully as these will help you in doing the assignment.
- Read the lesson from **NCERT textbook** also.

SUB TOPICS:

- MAKE YOUR OWN MAGNET
- ATTRACTION AND REPULSION BETWEEN MAGNETS

INSTRUCTIONAL AIDS:

- You-tube links : https://youtu.be/d2w0mNHcq2c (0:7/2:09) (How to make your own magnet)
- https://youtu.be/iE_rD4ECzEA(Attraction and Repulsion between two magnets)
- https://youtu.be/nKyLsVwVRTk
- NCERT Link :

https://schools.aglasem.com/ncert/ncert-books-class-6-science-chapter-13/

- (pg no.131 to133)

LEARNING OUTCOMES:

By the end of this lesson each learner will be able to-

- List all the properties of a magnet.
- Make his own magnet using iron rod and a bar magnet.

- Demonstrate that the freely suspended magnet points in North-South direction.
- State the cause of magnets losing their magnetic properties.

Lesson development

MAKE YOUR OWN MAGNET

There are several methods of making magnets. Let us learn the simplest one.

Step1. Take a rectangular piece of iron.

Step2. Place it on the table.

Step3. Now take a bar magnet and place one of its poles near one edge of the bar of iron.

Step4. Without lifting the bar magnet, move it along the length of the iron bar till you reach the other end.

Step5. Now, lift the magnet and bring the pole (the same pole you started with) to the same point of the iron bar from which you began (Fig. 13.11).

Step6. Move the magnet again along the iron bar in the same direction as you did before. Repeat this process about 30-40 times.

Step7. Bring a pin or some iron filings near the iron bar to check whether it has become a magnet. If not, continue the process for some more time.

Step8. Remember that the pole of the magnet and the direction of its movement should not change. You can also use an iron nail, a needle or a blade and convert them into a magnet.

You now know how to make a magnet.

***Fig.13.11** Making your own magnet*

Activity 6

- Magnetise an iron needle using a bar magnet.
- Now, insert the magnetised needle through a small piece of cork or foam.
- Let the cork float in water in a bowl or a tub.
- Make sure that the needle does not touch the water (Fig. 13.12).
- Your compass is now ready to work.
- Make a note of the direction in which the needle points when the cork is floating.

- Rotate the cork, with the needle fixed in it, in different directions.
- Note the direction in which the needle points when the cork begins to float again without rotating.
- Does the needle always point in the same direction, when the cork stops rotating?

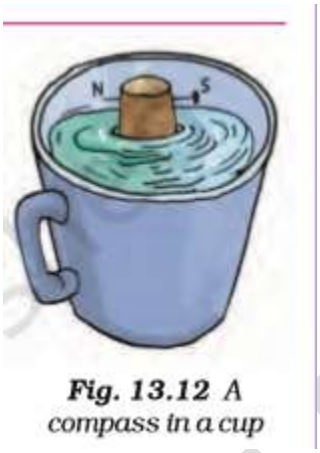


***Fig. 13.12** A compass in a cup*

ATTRACTION AND REPULSION BETWEEN MAGNETS

ACTIVITY

- ✓ Take two small toy cars and label them A and B.
- ✓ Place a bar magnet on top of each car along its length and fix them with rubber bands Fig. 13.13).
- ✓ In car A, keep the south pole of the magnet towards its front.
- ✓ Place the magnet in opposite direction in car B. Now, place the two cars close to one another (Fig. 13.13). What do you observe? Do the cars remain at their places? Do the cars run away from each other? Do they move towards each other and collide? Do the cars run away from each other?
- ✓ Now, place the toy cars close to each other such that the rear side of car A faces the front side of car B (Fig 13.14). Do they move as before? Note the direction in which the cars move now.
- ✓ Next, place the car A behind car B and note the direction in which they move in each case.
- ✓ Repeat the activity by placing cars with their rear sides facing each other.
- ✓ Record your observations in each case.
- ✓ Do two similar poles attract or repel each other? What about opposite poles — do they attract or repel each other?

This property of the magnets can also be observed by suspending a magnet and bringing one by one the poles of another magnet near it.

Fig. 13.13 Do opposite poles attract each other?

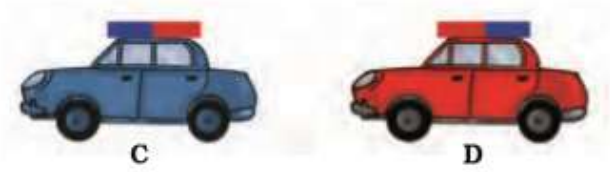
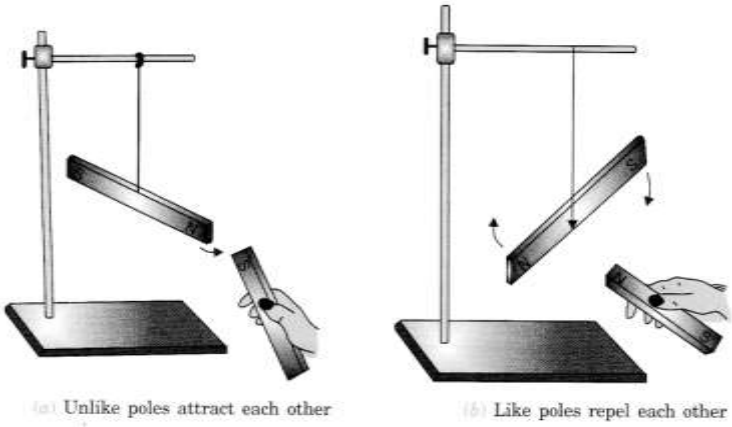
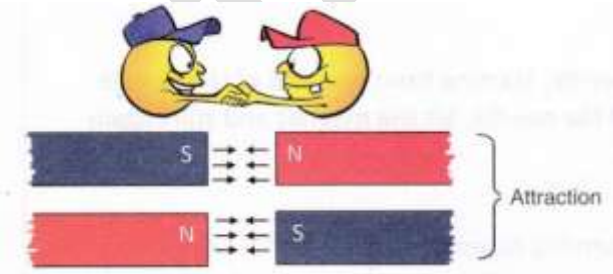


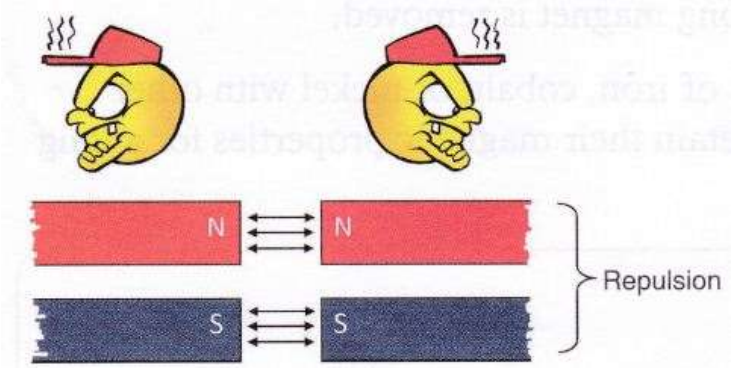
Fig. 13.14 Repulsion between similar poles?



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



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



A Few Cautions

i) Magnets lose their properties if they are

- heated,
- hammered or
- dropped from some height (Fig. 13.15).

Fig. 13.15 Magnets lose their property on heating, hammering and droping

ii) Also, magnets become weak if they are not stored properly.

- To keep them safe, bar magnets should be kept in pairs with their unlike poles on the same side.
- They must be separated by a piece of wood while two pieces of soft iron should be placed across their ends (Fig. 13.16).
- For horse-shoe magnet, one should keep a piece of iron across the poles.

Fig. 13.16 Store your magnets safely

- Keep magnets away from cassettes, mobiles, television, music system, compact disks (CDs) and the computer.

ASSIGNMENT 2

Q1. Enlist any two properties of a magnet.

Q2.A bar magnet has no markings to indicate its poles. How would you find out near which end is its north pole located?

Q3.Figure shows a magnetic compass. What will happen to the position of its needle if you bring a bar magnet near it? Draw a diagram to show the effect on the needle on bringing the bar magnet near it. Also draw the diagram to show the effect when the other end of the bar magnet is brought near it.

Q4.A bar magnet is cut into two pieces A and B, from the middle, as shown in figure.

Will the two pieces act as individual magnets? Mark the poles of these two pieces. Suggest an activity to verify your answer.

Q5. Suggest an arrangement to store a U shaped magnet. How is this different from storing a pair of bar magnets?