

## Long Answer Questions

**Q.1.** Three identical iron bars are kept on a table. Two out of three bars are magnets. In one of the magnets the North–South poles are marked. How will you find out which of the other two bars is a magnet? Identify the poles of this magnet. [NCERT Exemplar]

**Ans.**

- Suspend the bar magnet with marked poles freely using a stand and thread.
- Slowly bring another magnet near the south pole of the suspended magnet.
- If the magnet attracts towards it, that will be the north pole of another magnet and vice versa.
- Repeat the above steps with the third magnet.

Unlike poles attract and like poles repel each other.

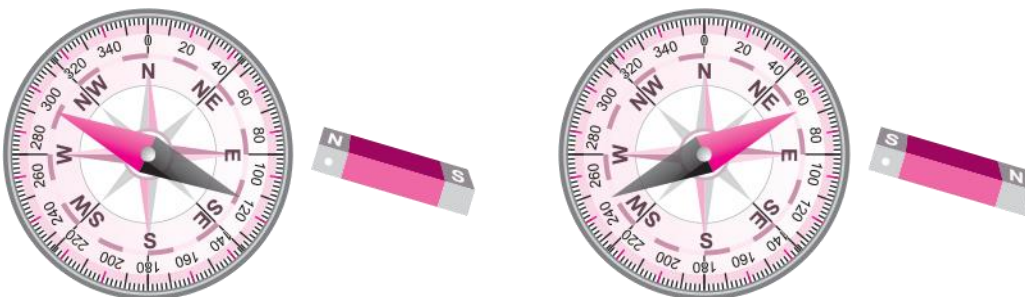
**Q.2.**



The figure given above 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.

[NCERT Exemplar]

**Ans.** When the north pole is brought near the compass, the needle of the compass gets deflected towards left. When the south pole is brought near the compass, the needle gets deflected towards right.

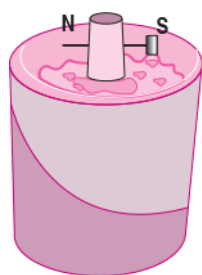


**Q.3. Suggest an activity to prepare a magnetic compass by using an iron needle and a bar magnet.** [NCERT]

*Exemplar]*

**Ans. Activity:**

- Magnetise an iron needle using a bar magnet as described previously.
- Take a small piece of cork or foam and insert the magnetised needle through it. Take a cup filled with water and let the cork float in it.
- Make sure that the needle does not touch the water (see figure).
- Now, your compass is ready to work. Note the direction in which the needle points when the cork is floating. Rotate the cork in different directions.
- Note the direction in which the needle points when the cork begins to float again without rotating. We see that the needle always points in the same direction, when the cork floats without rotation.



**Q.4. A bar magnet is cut into two pieces A and B, from the middle, as shown in the figure.**



**Will the two pieces act as individual magnets? Mark the poles of these two pieces. What will happen if these magnets are further broken?** [NCERT]

*Exemplar]*

**Ans.** Yes, the two pieces act as individual magnets. The poles of two pieces of magnet are:



The magnetic poles always exist in pairs. When an attempt is made to separate the magnetic poles by breaking a bar magnet in the middle, then it is observed that each of the two parts forms a complete magnet. New magnetic poles are developed at broken ends. Now if we further break each of these parts into two, even then each part will be a complete magnet and will contain a north pole and a south pole. Thus, even if a magnet

is broken into atoms, each atom will be a complete magnet. This clearly indicates that an isolated magnetic pole does not exist, *i.e.*, each magnet is a dipole.



**Q.5. Suggest an arrangement to store a U shaped magnet. How is this different from storing a pair of bar magnets?**

[NCERT

*Exemplar]*

**Ans. U shaped magnet:** One metal plate is placed across the two poles of the U shaped magnet.



**Bar magnet:** Bar magnets should be kept in pairs with opposite poles on the same side. Use two metal plates and one wooden block, arrange them as shown in the figure.

