

Board – CBSE

Class – 6<sup>th</sup>

Topic – Fun with Magnets

1. Fill in the blanks in the following:

- (i) Artificial magnets are made in different shapes such as \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_
- (ii) The materials which are attracted towards a magnet are called \_\_\_\_\_
- (iii) Paper is not a \_\_\_\_\_
- (iv) In the olden days, sailors used to find direction by suspending a piece of \_\_\_\_\_
- (v) A magnet always has \_\_\_\_\_ poles.

Ans: (i) bar magnet, horseshoe magnet and cylindrical magnet

(ii) magnetic materials

(iii) magnetic

(iv) bar magnet or lode stone

(v) two or a pair of

2. State whether the following statements are true or false:

- (i) A cylindrical magnet has only one pole.
- (ii) Natural magnets were discovered in Greece.
- (iii) Similar poles of a magnet repel each other.
- (iv) Maximum iron filings stick in the middle of a bar magnet when it is brought near them.
- (v) Bar magnets always point towards the North-South direction when suspended freely in the air.
- (vi) A compass can be used to find East-West direction at any place.
- (vii) Rubber is a magnetic material.

Ans: (i) False

(ii) True

(iii) True

(iv) False

(v) True

(vi) True

(vii) False

3. It was observed that a pencil sharpener gets attracted by both the poles of a magnet, although its body is made of plastic. Name a material that might have been used to make some part of it.

Ans: Iron is used to make some part of the sharpener, due to which it is attracted toward the magnet.

4. Column I shows different positions in which one pole of a magnet is placed near the other. Column II indicates the resulting action between them for each situation. Fill in the blanks.

Column I	Column II
N-N	_____
N-_____	Attraction
S-N	_____
_____ -S	Repulsion

Ans:

Column I	Column II
N-N	Repulsion
N-S	Attraction
S-N	Attraction
S-S	Repulsion

5. Write any two properties of a magnet.

Ans: Two properties of magnets are:

- (i) A magnet has two poles: the North pole and the South pole.
- (ii) Like poles repel each other and unlike poles attract each other.

6. Where are poles of a bar magnet located?

Ans: Poles are located at the ends of the bar magnet just before the ends. These are the north and south poles.

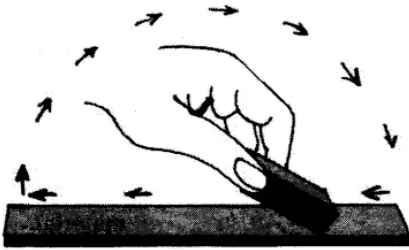
7. A bar magnet has no markings to indicate its poles. So how would you find out near which end is its north pole located?

Ans: Take the bar magnet and suspend it freely with the help of a thread, the end that points towards the north pole will be regarded as the north end of the magnet. Take a bar magnet with known/marked poles on it. Let the magnet's north pole be brought closer to the suspended magnet at the end that is pointing towards the North; if it shows repulsion, then it is confirmed.

8. You are given an iron strip. How will you make it into a magnet?

Ans: Making a magnet: Take an iron strip and place it on the table. Now take a bar magnet and place one of its poles near one edge of the strip of iron. Without lifting it move it along the length of the iron strip till you reach the other end. Now lift the magnet and bring the pole to the same point of the strip from where the job began. Repeat this process about 30-40 times. Next, bring some iron fillings near the strip

and observe that the strip attracts the fillings. This indicates that the iron strip becomes a magnet.

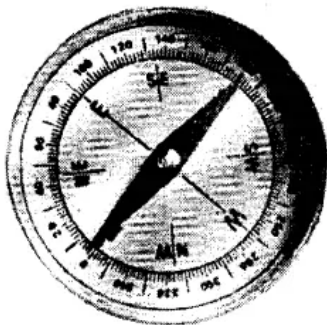


**Fig.** Making your own magnet

Remember that the pole of the magnet and the direction of its movement should not change.

9. How is a compass used to find direction?

**Ans:** A compass is a small case of glass. A magnetised needle is pivoted inside the box. The needle can rotate freely. Compass also has a dial with directions marked on it. The compass is kept at the place where we want to know the directions. When the needle comes to rest, it indicates a north-south direction. The compass is then rotated until the North and south marked on the dial are at the two ends of the needle. Usually, different colours are used to point the ends of the needle to identify the North and the south poles.



**Fig.** A compass

10. A magnet was brought from different directions towards a toy boat floating in water in a tub. The effect observed in each case is stated in Column I. Possible reasons for the observed effects are mentioned in Column II. Match the statements given in Column I with those in Column II.

Column I	Column II
The boat gets attracted to the magnet.	The boat is fitted with a magnet with a north pole towards its head.
The boat is not affected by the magnet.	The boat is fitted with a magnet with a south pole towards its head.
The boat moves towards the magnet if the north pole of the magnet is brought near its head.	The boat has a small magnet fixed along its length.

The boat moves away from the magnet when the north pole is brought near its head.

The boat floats without changing its direction.

The boat is made of magnetic material.

The boat is made up of non-magnetic material.

Ans:

Column I	Column II
1. Boat gets attracted towards the magnet.	The boat is made of magnetic material.
2. Boat is not affected by the magnet.	The boat is made up of non-magnetic material.
3. Boat moves towards the magnet if the magnet's north pole is brought near its head.	The boat is fitted with a magnet with a south pole towards its head.
4. Boat moves away from the magnet when the north pole is brought near its head.	The boat is fitted with a magnet with a north pole towards its head.
5. Boat floats without changing its direction.	The boat has a small magnet fixed along its length.

## VERY SHORT ANSWER TYPE QUESTIONS

11. Name the compound of iron contained in the lodestone.

Ans: The compound of iron is an iron oxide or magnetite.

12. Name the shepherd, after which magnet was named.

Ans: Magnets.

13. How can you separate a magnetic substance from a mixture?

Ans: By using a bar magnet, the magnetic substance is separated from the mixture.

14. At which place on a magnet, its magnetic force is maximum?

Ans: At poles.

15. In which direction does a suspended magnet come to rest?

Ans: Magnet comes to rest in N-S (north-south) direction.

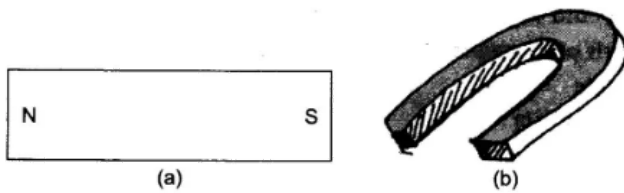
16. What happens when the N-pole of a magnet is brought near the N-pole of a suspended magnet?

Ans: There is repulsion between these two magnets as there is repulsion between like poles.

## SHORT ANSWER TYPE QUESTIONS

17. Draw the diagram of (a) Bar magnet (b) Horseshoe magnet.

Ans:



**Fig.** (a) Bar magnet (b) Horse-shoe magnet

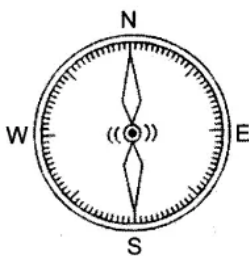
18. Identify magnetic and non-magnetic substances from the list given below: Iron, Steel, Nickel, Plastic, Wood, Copper and a Stainless Steel spoon

Ans:

Magnetic substance	The non-magnetic substance
Iron, steel, nickel	Plastic, wood, copper, stainless steel spoon

19. Draw a diagram of a magnetic compass.

Ans:



20. Write the main properties of a magnet.

- Ans:
- (i) Magnet has two poles—the south pole and the north pole.
  - (ii) Poles of magnets cannot be isolated.
  - (iii) Like poles repel each other and unlike poles attract each other.
  - (iv) Freely suspended magnet aligns in N-S direction.

21. Write two methods by which a magnet can be demagnetised.

- Ans:
- (1) By hammering the magnet strongly.
  - (2) By heating a magnet strongly and keeping it in the east-west direction.

22. It is advised to keep the magnets away from television, mobiles, CD and computers. Explain why?

Ans: Television, mobiles, CD, computers and many more devices are made up of magnetic materials and magnets. If you bring a magnet closer to it, then it will spoil these devices.

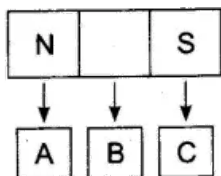
23. Few iron nails and screws got mixed with the wood shavings while a carpenter was working with them. How can you help him get the nails and screws back from the scrap without wasting his time searching with his hands?

Ans: With the help of a magnet, we can attract all iron nails and screws and separate them from the wooden shavings. This is because iron nails and screws are magnetic materials and will attract the magnet, whereas wooden shavings are non-magnetic.

24. It is said that repulsion is a sure test for magnetism. Why is it so?

Ans: To identify the magnet, repulsion (like poles of two magnets repel) is the only test that will let you know whether the given rod is an iron rod or a bar magnet. Because a magnet attracts an iron object and, unlike poles of magnets, also attract each other.

25. A given bar magnet was broken into pieces. Where will be its North and South pole?



Ans: If you cut a bar magnet into pieces, the end labelled as North remains North, and the other end formed will be south. Similarly, the end pointing south will be the south pole, and its opposite end will be the new north pole.

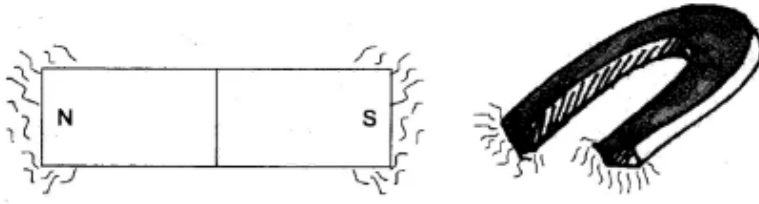
26. You are given two rods. Out of these, one is an iron rod, and the other one is a magnet; how will you identify these rods?

Ans: Take both the rods and suspend them separately. Bring one end of a bar magnet close to both ends of the suspended rod. If it shows attraction at both ends, then it is an iron rod. If it shows attraction at one end and repulsion at the other end, it is a bar magnet.

## LONG ANSWER TYPE QUESTIONS

27. Show that a magnet has two poles. What are the properties of the poles of a magnet?

Ans: We know that pole is the point where the strength of the magnet is maximum. So more and more iron particles will be attracted at the poles of a magnet when we bring a magnet near the iron particles. We will observe the crowdedness of particles at the ends of a magnet. This indicates the presence of two poles in a magnet. Hence poles are present in a magnet in pairs. If a magnet is divided into two parts, each part also possesses a pair of poles.



**Fig.** Crowdness of iron particles around poles