

NCERT QUESTIONS WITH SOLUTIONS

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 _____ material.
- (iv) In older days, sailors used to find direction by suspending a piece of _____.
- (v) A magnet always has _____ poles.

Solution

- (i) Artificial magnets are made in different shapes such as bar magnet, horse shoe and cylindrical.
- (ii) The materials which are attracted towards a magnet are called magnetic materials.
- (iii) Paper is not a magnetic material.
- (iv) In older days, sailors used to find direction by suspending a piece of magnet.
- (v) A magnet always has two poles.

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

- (i) A cylindrical magnet has only one pole.
- (ii) Artificial 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 North-South direction.
- (vi) A compass can be used to find East-West direction at any place.
- (vii) Rubber is a magnetic material.

Solution

- (i) False
All type of magnets have two poles i.e. north pole and south pole.
- (ii) False
Only natural magnet also known as magnetite was discovered in Greece.
- (iii) True
Like poles of a magnet repel each other and the unlike poles of magnet attract each other.
- (iv) False
The poles of a bar magnet have the strongest magnetic force. When the iron filings are sprinkled near the magnet, most of them stick at the poles of the magnet.
- (v) True
When the magnet is suspended freely, it aligns itself to the north-south direction.
- (vi) True
The needle of the magnetic compass points in the north direction because it aligns in the direction of earth's magnetic field. Since a compass needle points north, it can be used to tell north, east, south and west.
- (vii) False
Rubber is a non-magnetic material as it does not get attracted towards the magnet when brought near it.

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.

Solution

The blade of a pencil sharpener is made of iron. Iron is a magnetic material. Since magnets can attract objects made of magnetic materials, a pencil sharpener gets attracted towards both the poles of a magnet.

4. Column I shows different positions in which one pole of a magnet is placed near that of 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

Solution

Column I	Column II
N – N	Repulsion
N – S	Attraction
S – N	Attraction
S – S	Repulsion

5. Write any two properties of a magnet.

Solution

Properties of a magnet

- It attracts object made of iron, nickel or cobalt.
 - It directs in north-south direction when suspended freely.
6. Where are the poles of a bar magnet located?

Solution

The poles of a bar magnet are located on two ends of the bar magnet.

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

Solution

To find out the north pole of the bar magnet it is hanged freely with the help of a thread. The end pointing to north is the north of the magnet. This happens because when a bar magnet is suspended freely, it aligns itself to the north-south direction. It happens because the bar magnet aligns in the direction of the Earth's magnetic field.

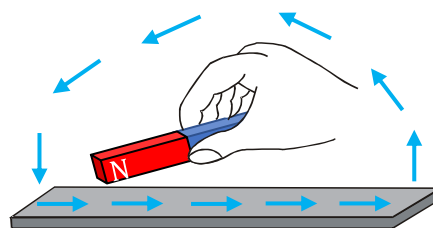
8. You are given an iron strip. How will you make it into a magnet?

Solution

Take a rectangular piece of iron. Place it on the table. Now 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 you reach the other end.

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. Move the magnet again along the iron bar in the same direction as you did before. Repeat this process about 50-60 times.

Now bring a awl pin near the iron bar. If iron bar attracts the pin, it means it has become a magnet.

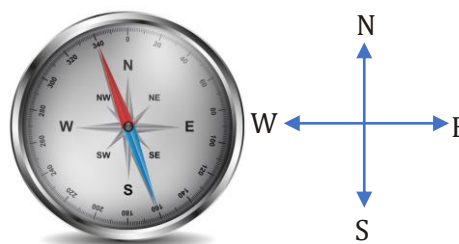


Making your own magnet

9. How is a compass used to find directions?

Solution

The needle of the magnetic compass points in the north direction because it aligns in the direction of Earth's magnetic field. Since a compass needle points north, it can be used to tell north, east, south and west as shown in the figure below.



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

Column I		Column II	
(i)	Boat gets attracted towards the magnet	(a)	Boat is fitted with a magnet with north pole towards its head
(ii)	Boat is not affected by the magnet	(b)	Boat is fitted with a magnet with south pole towards its head
(iii)	Boat moves towards the magnet if north pole of the magnet is brought near its head	(c)	Boat has a small magnet fixed along its length
(iv)	Boat moves away from the magnet when north pole is brought near its head	(d)	Boat is made of magnetic material
(v)	Boat floats without changing its direction	(e)	Boat is made up non-magnetic material

Solution

- (i) (d)
If the boat gets attracted towards the magnet then it is made up of magnetic material as only magnetic materials get attracted towards the magnet.
- (ii) (e)
If the boat is not affected by the magnet then it is made up of non-magnetic material as non-magnetic materials do not get attracted towards the magnet.
- (iii) (b)
If the boat move towards the magnet when the north pole of the magnet is brought near its head then the boat is fitted with a magnet with south pole towards its head as the north pole attracts the south pole.
- (iv) (a)
If the boat moves away from the magnet when the north pole of the magnet is brought near its head then the boat is fitted with a magnet with north pole towards its head as the north pole repels the north pole.
- (v) (c)
Magnets always points towards the north-south direction thus boat floats without changing its direction.