





3. No, because the circuit is broken

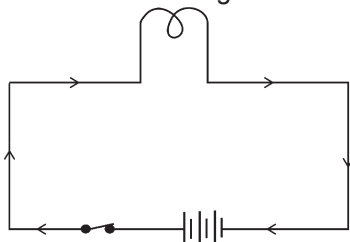
**P. 157 Oral Questions**

1. No, some liquids can conduct electricity, for example, pure water, salt solution, lime juice
2. Bare wires can give us electric shock and a coating of plastic insulates the wire.
3. A car battery, cell of a mobile phone
4. solar energy

**P. 158 Exercises**

- A. 1. d      2. c      3. d      4. b  
5. a (the conductivity of pure water is very small as compared to normal tap water)  
6. d      7. c      8. c      9. b
- B. 1. switch                      2. no  
3. conductors                  4. positive, negative  
5. true                            6. electrical  
7. positive                      8. false  
9. no                              10. true  
11. fused                        12. no
- C. 1. The path for electric current to flow from the positive terminal of a battery to the negative terminal is known as an electric circuit.  
2. When the circuit allows the flow of current it is said to be complete or closed.  
3. Electricity cannot flow in an open circuit because the path of the current is obstructed and it can no longer flow through the wire.  
4. An electric cell is needed in an electric circuit to supply electricity.  
5. The function of the switch is to break or complete the electric circuit.  
6. Ordinary dry cells can supply electricity for a certain time but chargeable cells can be used again and again by charging them.

- D. 1. a. a bulb   
b. an electric cell   
c. a switch   
d. a battery of electric cells 
2. An electric circuit showing flow of electric current.



3. Conductors:  
(i) A substance that allows electric current to flow through it is called a conductor of electricity.  
(ii) Copper, graphite and tap water are conductors.

Insulators:

- (i) An insulator or non-conductor does not allow electric current to flow through it.
  - (ii) Plastic, rubber and kerosene are insulators.
4. No. Because aluminium is not an insulating material like plastic, but a conductor of electricity. So, aluminium foil will not prevent us from getting electric shocks while handling electric wires.
5. A solar cell is a cell that directly converts solar energy into electrical energy.

Uses of solar cells:

- (i) Solar cells are used to give electrical power to human-made satellites in outer space.
  - (ii) They are also used to give power to street lights.
6. Electricity is generated in power stations and brought to our houses by wires.

**HOTS Questions**

1. No, current will not flow in the circuit because plastic is an insulator and hence, will not allow electric current to flow through it.
2. Silver is more conductive, but due to its cost (more expensive than copper or aluminium) it is not used in most cases.
3. Conductor because it allows electric charge to travel through it easily.
4. Charges may flow through us if we are earthed (in contact with the ground). If we are standing on an insulator such as rubber slippers we are no longer in contact with the ground, and charge can no longer flow through us.
5. Inside the cell, the current flows from negative to positive terminal
6. In outer space, no other source of electricity is available except solar energy. So, only solar cells are used as a source of power in satellites.

**14. FUN WITH MAGNETS**

**P. 166 Oral Questions**

1. No, I do not agree. Substances like gold, silver, copper are non-magnetic substances.
2. No, in a bar or horseshoe magnet the regions of strongest magnetic strength are near the ends called poles.
3. This is because the magnet aligned itself in attraction to the earth's magnetic field.
4. 10 north poles and 10 south poles
5. Yes. If both ends are attracted by the north pole, then it is a simple iron bar, not a magnet.

**P. 167 Oral Questions**

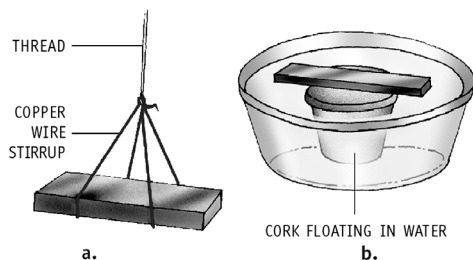
1. Yes, this is done by stroking the piece of iron from one end to the other with one pole of the magnet.

- Because, magnets tend to become weaker after some time if their poles are left free.
- All around the magnet, magnetic field
- Electric motor in fan, picture tube of television

**P. 168 Exercises**

- A. 1. a      2. c      3. d      4. a  
 5. a      6. d      7. c      8. d
- B. 1. false      2. repel, attract  
 3. South      4. no  
 5. single touch method      6. false  
 7. true      8. field  
 9. magnetic compass      10. keepers
- C. 1. Freely suspended magnet points in the north-south direction. This is because the earth itself behaves like a huge bar magnet with its magnetic poles near the geographical North and South Poles. In a freely suspended magnet, the North Pole points towards the geographical North Pole since it is attracted by the earth's magnetic South Pole. Similarly, the South Pole of the suspended magnet is attracted by the earth's magnetic North Pole and, therefore, points towards the geographical South Pole.
- We will get two separate magnets each with its north and south poles.
  - No, because copper is a non-magnetic substance.
  - Unlike poles attract and like poles repel each other.
  - Because a magnet loses its magnetism, if it falls from a height.
  - Magnetic keepers are used to store magnets in order to avoid self-demagnetization.
- D. 1. Put some iron filings on a sheet of paper. Roll a bar magnet in the filings and then lift it up. We will find that most of the iron filings stick to the magnet at the ends. There are fewer iron filings in between and almost none at the centre. Thus, in a bar magnet the regions of strongest magnetism are near the ends called the poles of a magnet.

2.

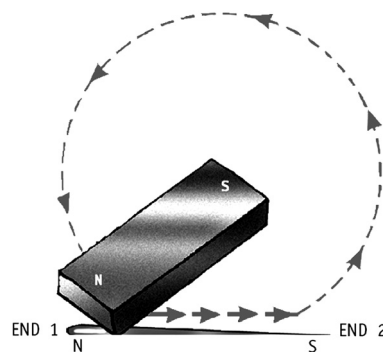


Methods of suspending a magnet freely

- Bring one pole of a magnet close to the ends of the magnetic material, one end at a time. If one end is attracted and the other repelled, the

magnetic material is a magnet. If both ends are attracted, the magnetic material is not a magnet.

- Place an iron nail or a bar on a table. Hold it down firmly and stroke it about 30 times, from one end to the other with one pole of a bar magnet. After you reach the other end, lift the magnet high and bring it back to the first end. We will find if we stroke with the north pole of the magnet, the end of the iron bar from which the stroking is started (end 1) becomes the north pole. The other end (end 2) becomes the south pole. If we stroke with the south pole, poles in the iron needle will be reversed.



- Magnetic compass: A compass consists of a magnetized needle pivoted at a point so that it is free to rotate about that point. The needle points in the north-south direction provided it is kept away from another magnet or other magnetic materials.
- Three uses of magnets are:
  - In refrigerator door stickers.
  - In electric motors used in fans and other electrical appliances.
  - In speakers, microphones, picture tubes of televisions and computer monitors.

**HOTS Questions**

- Compass is better as it can be used at any time of the day or night and in any weather. Stars can only be seen at night on a clear night. So they cannot be used during the day or in cloudy nights.
- No.
- By repulsion of like poles of powerful magnets.
- If we suspend the bar magnet freely, it will align itself in the north-south direction. The north pole of the bar magnet points towards the north direction. Now, with reference to the north direction, we can find the west direction.

**Be a Scientist**

The container of the compass was made of steel which is a magnetic material. It should have been made from a non-magnetic material such as aluminium.