



Class: VI	DEPARTMENT OF SCIENCE- 2022-2023	Date: 6/11/2022
Worksheet No.: 11 with answers	Topic: FUN WITH MAGNETS	Note: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.:

I. VERY SHORT ANSWER TYPE QUESTIONS (1M):

1. Where on a magnet is the magnetic force the maximum? **[Hint: At the poles.]**
2. Why is the compass needle kept in a closed glass vessel? **[Hint: Compass needle is a small and thin magnet. If it is kept in open, it may deflect in any direction due to wind. So, to know the right direction, it is kept covered by glass covering.]**
3. What will happen to the magnet when we cut it into two pieces? **[Hint: When we cut a bar magnet into two pieces, both these pieces act as magnets and we get two magnets.]**
4. In which direction a freely suspended magnet comes to rest? **[Hint: A freely suspended magnet comes to rest in North- South direction.]**
5. Where are the poles of a bar magnet located? **[Hint: At the two ends.]**
6. Why magnets should be kept away from mobiles, computer and compact disks (CDs)? **[Hint: Because information stored in these devices will be lost.]**
7. What happens when similar poles come close to each other? **[Hint: They repel each other.]**
8. How a mixture of iron filings and sand can be separated? **[Hint: Mixture of iron filings and sand can be separated by using a magnet.]**
9. Why does bar magnet always point in north-south directions? **[Hint: Bar magnet always points in north-south directions when left freely suspended because earth itself behaves like a magnet.]**

For the following questions, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below-

- i) Both A and R are true and R is correct explanation of the assertion.
- ii) Both A and R are true but R is not the correct explanation of the assertion.
- iii) A is true but R is false.
- iv) A is false but R is true

10. Assertion (A): Heat can destroy magnetic properties of a magnet.
Reason (R): There is maximum attraction in the middle of the bar magnet.
iii) A is true but R is false.
11. Assertion (A): An iron piece is placed along poles of horse shoe magnet while storing.
Reason (R): Magnets become weak if they are not stored properly.
i) Both A and R are true and R is correct explanation of the assertion.
12. Assertion (A): Materials that are not attracted towards magnet are called non-magnetic.
Reason (R): Each magnet has two magnetic poles-North and South.
ii) Both A and R are true but R is not the correct explanation of the assertion.

II. PASSAGE BASED QUESTIONS:

Read the following passage and answer the questions.

Magnets are pieces of iron or other materials which exhibit the properties of magnetism i.e. the ability to attract other objects that contain iron. Compass needles, fridge magnets and MRI scanners are some common examples of magnets. These days magnets come in different shapes and forms such as: horseshoe magnet, bar magnet, cylindrical or a ball-ended magnet, needle magnet etc. A great property of a magnet is that it can prove extremely helpful in navigating directions. This is because a freely suspended magnet always points in the North-South direction. This property of magnet is used to make a compass. A magnetic needle is placed inside a box with directions marked on it. It is allowed to rotate freely so that when the compass is kept at the position of rest, the needle points towards the north and south direction.

1. Study the given statements.

- i) A compass is used to show directions.
- ii) The needle of a compass is magnetic.
- iii) The needle of a compass always indicates the N and the S directions of the earth.

Identify the correct statements.

- a) only i) and ii)
- b) only ii) and iii)
- c) only i) and iii)
- d) all the three.**

2. Which property of magnet is used to make a magnetic compass?

- a) A magnet attracts magnetic materials.
- b) Like poles repel.
- c) A magnet can induce magnetism.
- d) A freely suspended magnet aligns in N-S direction.**

3. How is a compass useful to us?

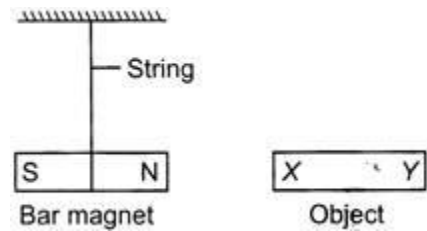
- a) In finding the altitude of a place.
- b) In finding only the north of a place.
- c) In finding all the directions of a place.**
- d) In making artificial magnets.

4. Neha is standing in the middle of a cross road with a compass. The red portion of the compass needle is pointing towards her. She wants to go towards the east, then she should turn:

- a) Right and then go straight
- b) **Left and then go straight**
- c) Right and then turn left
- d) Left and then turn right

III. CASE STUDY-BASED QUESTIONS:

1. Raj suspended a bar magnet on a string as shown in the diagram below. He brought 3 bar-shaped objects P, Q and R towards the bar magnet. He placed the ends (X and Y) of each object, near the north pole of the bar magnet and recorded his observations in the table below.



Object	End X brought near to N pole	End Y brought near to N pole
P	N pole repelled	N pole attracted
Q	N pole attracted	N pole repelled
R	N pole remains stationary	N pole remains stationary

a) Which of the following statement is true?

- i) Object P is non-magnetic
- ii) Object Q is non-magnetic.
- iii) **Object R is non-magnetic.**
- iv) Object P and R are non-magnetic.

b) Which pole is marked as “X” in object P?

- i) **North**
- ii) South
- iii) East
- iv) West

c) Which pole is marked as “Y” in object P?

- i) North
- ii) **South**
- iii) East
- iv) West

d) Which pole is marked as “X” in object Q?

- ii) North
- ii) **South**
- iii) East
- iv) West

e) Which pole is marked as “Y” in object Q?

- i) **North**
- ii) South
- iii) East
- iv) West

2. Ravi is a carpenter. While working, few iron nails and screws got mixed with the wooden shavings. How can you help him in getting the nails and screws back from the scrap without wasting his time in searching with his hands? **[Hint- With the help of a magnet he can attract all iron nails and screws and can separate them from the wooden shavings. As iron nails and screws are magnetic materials and will get attracted to the magnet, whereas wooden shavings are non-magnetic.]**

IV. a) SHORT ANSWER TYPE QUESTIONS (2M):

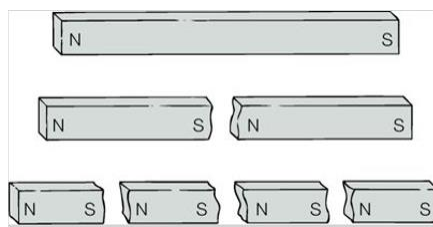
1. You are provided with two identical metal bars. One out of the two, is a magnet. How would you identify the magnet? **[Hint- Take some iron filings and move the iron bars over these iron filings. If iron filings are attracted very strongly at poles, then it is a magnet and if they are not attracted, then it is simply an iron bar.]**

2. It was observed that a pencil sharpener gets attracted by 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. **[Hint: The blade of a pencil sharpener is made of iron which is a magnetic material. Due to this a pencil sharpener gets attracted towards the poles of a magnet.]**

3. What is natural magnet? Give examples. **[Hint: Magnets which are found in nature are called natural magnet. Example: Magnetite, Pyrrhotite, ferrite, columbite.]**

4. Distinguish between magnetic and non-magnetic substances with suitable examples. **[Hint: Substances which get attracted by the magnet are called magnetic materials. e.g., iron nail. Substances which are not attracted by magnet are called non-magnetic substances. e.g., wood, glass.]**

5. Why are the two poles of a magnet inseparable? **[Hint: The two poles of a magnet cannot exist independently. That is why they always come in pairs. If we cut or break a magnet into two, we cannot isolate the North pole and South pole. We could get two pieces, each having a North pole and South pole. Therefore, the two poles of a magnet are inseparable.]**



IV.b) SHORT ANSWER TYPE QUESTIONS (3M):

1. A bar magnet has no markings to indicate its poles. How can you find out the location of the north pole? **[Hint: Location of the poles of a magnet can be determined by suspending it freely. A freely suspended bar magnet always points in north-south direction. The end that points towards north direction is the north pole of the magnet while the end that points towards south direction is the south pole of the magnet.]**

2. What will happen if a magnet is brought near a magnetic compass? **[Hint: When a magnet is brought near a compass, then the magnet will attract or repel the magnetic needle of compass due to which the compass needle will be disturbed from its usual north-south direction. The compass needle will point in another direction.]**

3. List the different properties of magnets. [Hint: i) A magnet attracts magnetic substances such as iron, cobalt and nickel as well as some alloys; ii) Magnet has two poles: north and south pole, unlike poles attract each other while like poles repel each other; iii) Freely suspended magnet always align itself towards north-south direction.]

4. What is the correct way of storing a bar magnet and horse magnet.

i) Bar magnet [Hint: Two-bar magnets should be placed inside a wooden box so that: a) the poles of two magnets lie opposite to each other.

b) A wooden piece should be kept between the two magnets.]

ii) Horse-shoe magnet. [Hint- Horse-shoe magnet is kept along with an iron piece across its two poles.]

5. How can magnets be used to separate junks from junkyard? [Hint: Magnets attract materials like iron, cobalt and nickel. In junkyard objects made of such magnetic material can be separated by causing them to attract to a strong magnet. Therefore, a crane with a strong magnet can be used to separate magnetic materials from the junk.]

V. LONG ANSWER TYPE QUESTIONS (5M):

1. What is a compass? Describe the use of compass.

[Hint: A compass is a device that indicates direction. It is a small glass box with a magnetic needle placed on a dial. The magnetised needle is pivoted and can rotate freely. Usually different colours are used to point the ends of needle to identify the north and the south poles. The dial has directions marked on it. When the compass is kept at the position of rest, the needle points towards the north and south direction. This property is used in navigating directions.]



2. Describe the steps involved in magnetising an iron strip with the help of a magnet. Draw a diagram to support your explanation.

[Hint:- (i) Take an iron strip which is to be magnetised.

(ii) Keep it on a wooden table.

(iii) Hold one end of a bar magnet in your hand and keep the other end of bar magnet near one edge of iron strip.

(iv) Without lifting, move it along the length of iron strip till you reach the other edge.

(v) After reaching the end of iron strip, lift the bar magnet and bring it to the same position and repeat the process again and again.

(vi) Bring some iron filings near the iron strip to check whether it has become a magnet. If not, continue the same process for some more time.]



3. State uses of magnets. [Hint: ATM, credit and debit cards have a magnetic strip that stores information and enables transactions of money, Magnets are used in junk yards to separate iron objects from other waste materials. Magnetic compass is used to find directions. It has a small magnetic needle at its centre. Maglev or Magnetic levitation trains have been developed in Japan. These trains are without wheels and move a little above the rails.]

4. What precautions need to be taken while handling a magnet? [Hint: When heated, hammered or dropped from a height, magnets tend to lose their properties.

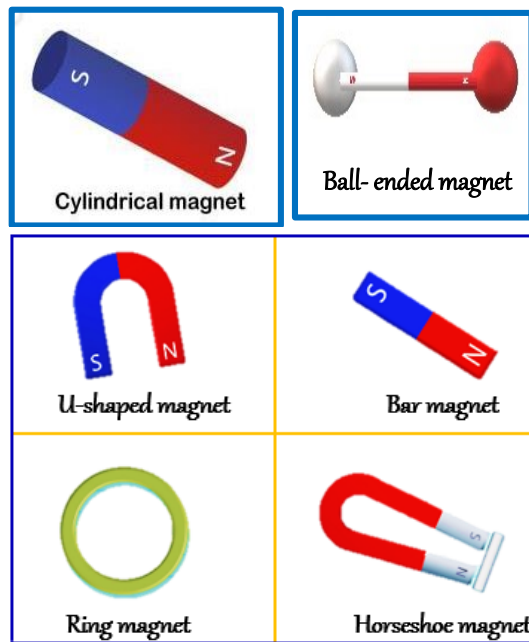
They become weak if they are not stored properly and hence:

- Bar magnets should be stored in pairs separated by a small block of wood and their unlike poles facing the same side with a soft iron across their ends.
- A piece of iron should be kept across the poles in case of a horse shoe magnet.

Magnets should be kept away from computers, mobiles, televisions etc.

Magnets should be handled with care and they should be stored properly.]

5. Draw the different types of artificial magnets.



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