

Chapter 4: Exploring Magnets

Worksheet 1 — MCQs, Fill in the Blanks, True/False, Short Answers & Short Notes (3 Practice Sets with Answers)

SET A — Objective & Short Answer Worksheet

Name: _____ Date: _____

Class: _____ Section: _____

Section 1 — Multiple Choice Questions (10 × 1 = 10 Marks)

Tick (✓) the correct option.

- Which of the following is a naturally occurring magnet? [1 Mark]
(a) Bar magnet (b) Lodestone (c) Ring magnet (d) U-shaped magnet
- Which metal is NOT attracted by a magnet? [1 Mark]
(a) Iron (b) Nickel (c) Copper (d) Cobalt
- The materials that are not attracted by a magnet are called: [1 Mark]
(a) Magnetic materials (b) Non-magnetic materials (c) Metallic materials (d) Artificial materials
- Maximum iron filings stick near the ____ of a bar magnet. [1 Mark]
(a) middle (b) ends (c) surface (d) centre
- A freely suspended magnet always rests along the: [1 Mark]
(a) East-West direction (b) North-South direction (c) any direction (d) vertical direction
- The end of a magnetic compass needle that points north is usually painted: [1 Mark]
(a) blue (b) green (c) red (d) black
- Like poles of two magnets: [1 Mark]
(a) attract each other (b) repel each other (c) have no effect (d) cancel each other
- Which device was used by sailors in olden days to find directions? [1 Mark]
(a) Thermometer (b) Magnetic compass (c) Barometer (d) Telescope
- The traditional Indian navigation device made of a magnetised fish-shaped iron piece is called: [1 Mark]
(a) Disha-yantra (b) Matsya-yantra (c) Uttar-yantra (d) Chumbak-yantra
- Placing a wooden sheet between a magnet and a compass needle: [1 Mark]
(a) stops the deflection completely (b) has no appreciable effect on the deflection (c) reverses the poles (d) destroys the magnet

Section 2 — Fill in the Blanks (10 × 1 = 10 Marks)

Fill in the blanks with the correct word(s).

- Magnets that occur naturally are called _____. [1 Mark]
- The metal _____ is strongly attracted by a magnet and is found in nails and pins. [1 Mark]

3. Objects that get attracted by a magnet are made of _____ materials. [1 Mark]
4. A magnet has two poles known as the _____ pole and the _____ pole. [1 Mark]
5. A freely suspended magnet always comes to rest along the _____ direction. [1 Mark]
6. The device used to find directions with the help of a magnetic needle is called a _____. [1 Mark]
7. Like poles of two magnets _____ each other. [1 Mark]
8. Unlike poles of two magnets _____ each other. [1 Mark]
9. The traditional Indian magnetic navigation device was called _____. [1 Mark]
10. A magnet should never be kept near mobile phones or _____. [1 Mark]

Section 3 — True or False (10 × 1 = 10 Marks)

Write True or False in the space provided.

1. A magnet can be broken into pieces to obtain a single pole. [True / False]
2. Iron, nickel and cobalt are magnetic materials. [True / False]
3. A freely suspended magnet rests along the east-west direction. [True / False]
4. Like poles of two magnets repel each other. [True / False]
5. Lodestones are artificial magnets made by humans. [True / False]
6. The needle of a magnetic compass is itself a small magnet. [True / False]
7. Wood is a magnetic material. [True / False]
8. Placing a glass sheet between a magnet and a compass needle stops the deflection completely. [True / False]
9. Nickel and cobalt are magnetic metals besides iron. [True / False]
10. Magnets should be kept close to mobile phones for safe storage. [True / False]

Section 4 — Answer in Two Lines (10 × 2 = 20 Marks)

1. What are magnetic materials? Give one example. [2 Marks]

2. What are non-magnetic materials? Give one example. [2 Marks]

3. Name the two poles of a magnet. [2 Marks]

4. Why can a magnet not have a single pole? [2 Marks]

5. What is a lodestone? [2 Marks]

6. What happens when like poles of two magnets are brought close together? [2 Marks]

7. What happens when unlike poles of two magnets are brought close together? [2 Marks]

8. What is a magnetic compass used for? [2 Marks]

9. Which direction does a freely suspended bar magnet point towards? [2 Marks]

10. Name any two metals, other than iron, that are magnetic. [2 Marks]

Section 5 — Short Notes: 5 to 8 Lines ($5 \times 3 = 15$ Marks)

1. Describe Activity 4.1 (identifying magnetic and non-magnetic materials) and its conclusion. [3 Marks]

2. Explain what happens when iron filings are sprinkled on a sheet of paper and a bar magnet is placed over them. [3 Marks]

3. Describe how a freely suspended bar magnet behaves and why. [3 Marks]

4. Explain the working of a magnetic compass. [3 Marks]

5. Describe the interaction between two bar magnets when their like and unlike poles are brought close. [3 Marks]

✓ ANSWER KEY — Set A**Section 1: Multiple Choice Questions**

1. (b) 2. (c) 3. (b) 4. (b) 5. (b) 6. (c) 7. (b) 8. (b) 9. (b) 10. (b)

Section 2: Fill in the Blanks

1. lodestones
2. iron
3. magnetic
4. North, South
5. north-south
6. magnetic compass
7. repel
8. attract
9. matsya-yantra
10. remote controls

Section 3: True or False

1. False 2. True 3. False 4. True 5. False 6. True 7. False 8. False 9. True
10. False

Section 4: Answer in Two Lines

1. Materials that get attracted towards a magnet are called magnetic materials, e.g. iron.
2. Materials that are not attracted towards a magnet are called non-magnetic materials, e.g. wood or plastic.
3. The North pole and the South pole are the two poles of a magnet.
4. Because North and South poles always exist in pairs, even in the smallest broken piece of a magnet.

5. A lodestone is a naturally occurring magnet that was discovered in ancient times.
6. Like poles (North-North or South-South) repel each other.
7. Unlike poles (North-South) attract each other.
8. A magnetic compass is a device used to find directions with the help of a freely rotating magnetic needle.
9. It always comes to rest along the north-south direction.
10. Nickel and cobalt are magnetic metals other than iron.

Section 5: Short Notes

1. In Activity 4.1, students collect a few objects made of different materials along with a magnet. They first predict which objects will stick to the magnet and record this in a table. Then they bring the magnet near each object and observe which ones actually get attracted. Objects made of iron and a few other metals like nickel and cobalt stick to the magnet, while objects made of wood, plastic, glass, and rubber do not. From this activity, we conclude that only certain materials, called magnetic materials, are attracted towards a magnet, while the rest are non-magnetic materials.
2. When iron filings are spread on a sheet of paper and a bar magnet is placed over them, the filings do not stick uniformly all over the magnet. Instead, maximum iron filings cling near the two ends of the bar magnet, while very few stick to the middle portion. This shows that the magnetic force is strongest at the ends of the magnet. These two ends are called the poles of the magnet — the North pole and the South pole.
3. When a bar magnet is suspended freely with a thread tied at its middle so that it can rotate horizontally, it always comes to rest along the north-south direction, however many times it is rotated and released. This happens because the Earth itself behaves like a giant magnet, and the freely suspended magnet aligns itself with the Earth's magnetic field. The end pointing north is called the North pole, and the end pointing south is called the South pole.

4. A magnetic compass is a small circular box with a transparent cover, containing a magnetic needle mounted on a pin so that it can rotate freely. When the compass is placed at a spot, the needle comes to rest along the north-south direction after a little time. The compass box is then gently rotated until the north and south marks on the dial line up with the needle. Once this is done, all other directions at that place can be read directly from the dial, since the needle always points north-south due to the Earth's magnetism.
5. When two bar magnets are brought near each other, their behaviour depends on which poles face each other. If the like poles (North-North or South-South) of the two magnets face each other, they repel and push each other away. If the unlike poles (North-South) face each other, they attract and pull towards each other. This property of repulsion is unique to magnets — a non-magnetic iron bar will be attracted by both poles of a magnet, but never repelled, which is why repulsion is used as a test to identify a true magnet.