

Chapter 4: Exploring Magnets

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

SET B — Objective & Short Answer Worksheet

Name: _____ Date: _____

Class: _____ Section: _____

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

Tick (✓) the correct option.

- Magnets used in pencil boxes and stickers are examples of: [1 Mark]
(a) natural magnets (b) artificial magnets (c) temporary magnets (d) electro-magnets
- A magnet always has: [1 Mark]
(a) one pole (b) two poles (c) three poles (d) no poles
- Which of these is NOT a shape of a magnet mentioned in the chapter? [1 Mark]
(a) Bar (b) U-shaped (c) Ring (d) Triangular
- The North-seeking pole of a freely suspended magnet points towards: [1 Mark]
(a) South (b) North (c) East (d) West
- Our Earth behaves like a: [1 Mark]
(a) small compass (b) giant magnet (c) non-magnetic ball (d) lodestone
- In a magnetic compass, the needle is mounted on a pin so that it can: [1 Mark]
(a) stay fixed (b) rotate freely (c) melt easily (d) attract only iron
- When the North pole of a bar magnet is brought near the North pole of a compass needle, the needle: [1 Mark]
(a) moves closer (b) moves away (c) stays still (d) breaks
- Unlike poles of two magnets: [1 Mark]
(a) repel each other (b) attract each other (c) do not interact (d) destroy each other
- If an ordinary iron bar (not a magnet) is brought near a magnet, its two ends are: [1 Mark]
(a) both attracted (b) both repelled (c) one attracted, one repelled (d) unaffected
- Which property helps us identify whether an object is truly a magnet? [1 Mark]
(a) Its colour (b) Its weight (c) Repulsion with another magnet (d) Its size

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

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

- Nickel and _____ are metals that are magnetic, besides iron. [1 Mark]
- Materials that are not attracted by a magnet are called _____ materials. [1 Mark]
- Iron filings stick the most near the _____ of a bar magnet. [1 Mark]
- It is not possible to obtain a magnet with a _____ pole. [1 Mark]

5. The North pole of a magnet is sometimes painted _____ in colour. [1 Mark]
6. A magnet mounted on a pin so that it rotates freely forms the needle of a _____. [1 Mark]
7. Our _____ behaves like a giant magnet. [1 Mark]
8. Magnets used in school laboratories are examples of _____ magnets. [1 Mark]
9. A magnet can be identified by its property of _____ with another magnet. [1 Mark]
10. Magnets should be stored in pairs with _____ poles kept on the same side. [1 Mark]

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

Write True or False in the space provided.

1. Non-magnetic materials are attracted towards a magnet. [True / False]
2. Maximum iron filings stick near the poles (ends) of a bar magnet. [True / False]
3. Unlike poles of two magnets repel each other. [True / False]
4. The Earth behaves like a giant magnet. [True / False]
5. A magnetic compass needle rotates freely on a pin. [True / False]
6. Rubber and plastic are magnetic materials. [True / False]
7. A bar magnet always has two poles, no matter how small the piece. [True / False]
8. The North pole of a compass needle is usually painted blue. [True / False]
9. Magnets used in pencil boxes are natural magnets. [True / False]
10. An ordinary iron bar (non-magnet) gets attracted by both poles of a magnet. [True / False]

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

1. Where do maximum iron filings stick on a bar magnet? [2 Marks]

2. Why is the North pole of a compass needle usually painted red? [2 Marks]

3. How can you test whether a piece of metal is a magnet or not? [2 Marks]

4. What is matsya-yantra? [2 Marks]

5. Name any two shapes in which magnets are commonly found. [2 Marks]

6. What did Reshma notice about the pencil box and school duster? [2 Marks]

7. Why does a compass needle always point in the north-south direction? [2 Marks]

8. What happens to a compass needle when a wooden sheet is placed between it and a magnet? [2 Marks]

9. How can a magnet be identified using the property of repulsion? [2 Marks]

10. State one precaution that should be taken while storing magnets. [2 Marks]

Section 5 — Short Notes: 5 to 8 Lines (5 × 3 = 15 Marks)

1. Write short notes on the poles of a magnet. [3 Marks]

2. Explain how you would make a simple magnetic compass using a needle, magnet, cork and water. [3 Marks]

3. Describe how the magnetic effect of a magnet acts through non-magnetic materials, with reference to Activity 4.7. [3 Marks]

4. Explain the property of repulsion and how it is used to identify a magnet. [3 Marks]

5. Write about the precautions to be taken while storing and handling magnets. [3 Marks]

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

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

Section 2: Fill in the Blanks

1. cobalt
2. non-magnetic
3. ends (poles)
4. single
5. red
6. magnetic compass
7. Earth
8. artificial
9. repulsion
10. unlike

Section 3: True or False

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

Section 4: Answer in Two Lines

1. Maximum iron filings stick near the two ends (poles) of a bar magnet.
2. It is painted red so that it can be easily identified while reading directions.
3. Suspend it freely; if it always comes to rest along the north-south direction, it is a magnet.
4. It was an ancient Indian navigation device made of a magnetised fish-shaped iron piece kept in a vessel of oil.

5. Bar magnet and U-shaped magnet (also ring, disc, cylindrical and spherical magnets).
6. She noticed they had magnets fitted in them to help them stay closed or stick to the board.
7. Because the Earth behaves like a giant magnet and the needle aligns with its magnetic field.
8. There is no appreciable change in its deflection, since wood is non-magnetic.
9. A true magnet will repel the like pole of another magnet, while a plain iron bar will only be attracted, never repelled.
10. Magnets should be stored in pairs with unlike poles on the same side, and not heated, dropped or hammered.

Section 5: Short Notes

1. Every magnet has two poles, called the North pole and the South pole, located near its two ends. Most of the magnetic attraction of a magnet is concentrated at these poles, as shown by the way iron filings cling mostly near the ends of a bar magnet. The poles always exist in pairs — even if a magnet is broken into several smaller pieces, each new piece will still have both a North pole and a South pole. It is impossible to obtain a magnet with only a single pole, however small the piece may be.
2. Take an iron sewing needle and rub one pole of a bar magnet along its length in the same direction, lifting the magnet each time before bringing it back to the starting point. Repeat this thirty to forty times so that the needle becomes magnetised. Check this by bringing iron filings or steel pins near the needle — if they get attracted, the needle has become a magnet. Pass the magnetised needle horizontally through a small cork and float the cork in a glass bowl filled with water, keeping the needle above the water level. When the needle comes to rest, it will point in the north-south direction, and a simple magnetic compass is ready.

3. In Activity 4.7, a compass needle is first allowed to deflect near a bar magnet.

Then, a piece of wood is placed vertically between the magnet and the compass needle without disturbing either of them. On observing the needle, we find there is no appreciable change in its deflection. The same result is obtained when the wood is replaced with cardboard, a thin plastic sheet, or a thin glass sheet. This shows that the magnetic effect of a magnet is able to pass through non-magnetic materials, which do not block or weaken it noticeably.

4. When the like poles of two magnets — either both North poles or both South poles — are brought close to each other, they repel, or push each other away. This is different from an ordinary iron bar, whose two ends are always attracted by both poles of a magnet and are never repelled. Because only a true magnet shows repulsion when brought near the same pole of another magnet, this property gives us a reliable way to check whether an unknown metal piece is actually a magnet or just a plain piece of iron.

5. Magnets need to be handled carefully to keep them working well for a long time. They should never be heated, dropped, or hammered, as rough handling can weaken or destroy their magnetism. Magnets should also be kept away from mobile phones and remote controls, since they can affect these devices. For safe storage, a pair of magnets should be kept together with their unlike poles on the same side, and two pieces of soft iron should be placed across their ends to help preserve their magnetic strength.