Your notes

GCSE Physics: revision notes

Magnets and magnetic fields

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Magnetic poles

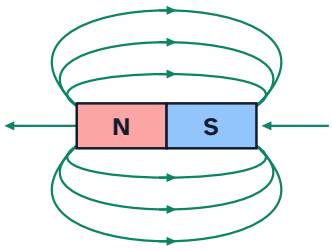
- The poles of a magnet are the places where the magnetic forces are strongest.
- When two magnets are brought close together they exert a force on each other: like poles repel and unlike poles attract.
- Attraction and repulsion between two **magnetic poles** are examples of non-contact forces.

Permanent and induced magnets

- A **permanent magnet** produces its own **magnetic field**.
- An **induced magnet** is a material that becomes a magnet when it is placed in a **magnetic field**.
- Induced magnetism always causes a force of attraction. When removed from the field, an **induced magnet** loses most or all of its magnetism quickly.
- Iron, steel, cobalt and nickel are **magnetic materials**.

Magnetic fields

- The **magnetic field** is the region around a magnet where a force acts on another magnet or on a **magnetic material**.
- The field is strongest at the poles and gets weaker further from the magnet.
- The direction of the field at any point is the direction of the force on a north pole placed there. **Field lines** go from the north (seeking) pole to the south (seeking) pole.
- The closer together the **field lines**, the stronger the field.



Field lines go from north to south. Closer lines: a stronger field.

Compasses and the Earth

- A magnetic compass contains a small bar magnet that lines up with the **magnetic field**.
- A **plotting compass** can be used to plot the **field lines** around a magnet: move it around the magnet and mark the direction the needle points.
- The Earth has a **magnetic field**. A compass needle points north because it lines up with the Earth's field, which is evidence that the Earth's core is magnetic.

Key terms

Magnetic pole	A place on a magnet where the magnetic forces are strongest.
Permanent magnet	A magnet that produces its own magnetic field all the time.
Induced magnet	A material that becomes a magnet only when it is in a magnetic field.
Magnetic field	The region around a magnet where a force acts on magnets or magnetic materials.
Magnetic material	A material attracted by a magnet: iron, steel, cobalt or nickel.
Field line	A line showing the direction of a magnetic field, from north to south.
Plotting compass	A small compass used to find the direction of a magnetic field.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What happens when two north poles are brought together?
2. What happens when a north pole and a south pole are brought together?
3. Where is a magnet's field strongest?
4. Which of these is a magnetic material?
5. What is an induced magnet?

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6. What force is always produced by induced magnetism?
7. In which direction do magnetic field lines point?
8. How can you plot the field around a bar magnet?

Answers

1. They repel
2. They attract
3. At the poles
4. Nickel
5. A material that becomes a magnet when placed in a magnetic field
6. Attraction
7. From north to south
8. Move a plotting compass around it and mark the needle's direction

What to do next

Practise 10 questions on this topic

Try 7 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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