CAIE Physics IGCSE

Topic 4.1 - Simple phenomena of magnetism

Flashcards

What is a magnet?

What is a magnet?

A magnet is a material or object that produces a magnetic field.

What causes magnetic forces?
(supplement)

What causes a magnetic force? (supplement)

Interactions between magnetic fields.

What magnetic forces act between like and opposite poles of magnets?

What magnetic forces act between like and opposite poles of magnets?

Like poles repel each other, while opposite poles attract each other.

What is a magnetic material?

What is a magnetic material?

A material that is attracted to a magnet and can be magnetised.

What magnetic forces act between magnets and magnetic materials?

What magnetic forces act between magnets and magnetic materials?

The force between a magnet and a magnetic material is always attractive.

What is a permanent magnet?

What is a permanent magnet?

An object which always has poles, as it creates its own magnetic field and is therefore always magnetic.

What is an temporary (induced) magnet?

What is a temporary (induced) magnet?

A magnetic material which has been induced to become a magnet (magnetised) by placing it in a magnetic field, but loses its magnetisation when the field is removed.

Give examples of magnetic materials.

Give examples of magnetic materials.

Iron, steel, cobalt, nickel etc.

Describe how materials are magnetised.

Describe how materials are magnetised.

- Stroking them with a magnet
- Hammering them in a magnetic field
- Placing them in a coil with a direct current through it

Give an example of where electromagnets are more useful than permanent magnets and why.

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- Moving scrap metal (they can be turned off to drop the metal where it needs to be transported to).
- Electric motors (turned off when not in use).

Give an example of where permanent magnets are more useful than electromagnets and why.

Give an example of where permanent magnets are more useful than electromagnets and why.

- Fridges and compasses.
- The magnetic force needs to be constant.

What is a magnetic field?

What is a magnetic field?

A region where magnetic objects experience a force.

Describe the key features of field lines in a magnetic diagram.

Describe the key features of field lines in a magnetic diagram.

- They have arrows pointing from north to south, showing the direction of the force on the north pole of a magnet placed in the magnetic field at that point.
- The lines never touch, cross or overlap.

How is the strength of a magnet displayed in a magnetic diagram? (supplement)

How is the strength of a magnet displayed in a magnetic diagram? (supplement)

By the spacing of the field lines (the closer together they are, the stronger the magnet).

Where is a magnetic field strongest?

Where is a magnetic field strongest?

At the poles of a magnet.

Magnetic field strength decreases as...

Magnetic field strength decreases as...

Distance from the magnet increases.

What 2 methods can be used to investigate magnetic field shapes?

What 2 methods can be used to investigate magnetic field shapes?

- Using plotting compasses
- Using iron filings

How do you use a plotting compass to visualise magnetic field lines?

How do you use a plotting compass to visualise magnetic field lines?

- Place a magnet on top of paper and draw around it.
- Put a plotting compass next to a point around the magnet's edge with its needle pointing towards this point.
- Draw a dot at the other side of the compass needle.
- Move the compass to point towards the new dot and draw another dot on the other side of the needle.
- Repeat to form a dotted line connecting one end of the magnet to the other.
- Link the dots to create the magnetic field line, following the direction of the plotting compass needle.
- Repeat starting at different points around the magnet's edge.

How do you use iron filings to visualise magnetic field lines?

How do you use iron filings to visualise magnetic field lines?

- Place paper on top of a magnet.
- Sprinkle iron filings onto the paper.
- Tap the paper gently, causing the filings to settle along the magnetic field lines.