

OCR (B) Physics GCSE

Topic 3.5 - What are magnetic fields?

Flashcards

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What is a magnetic field?



What is a magnetic field?

A region in which a magnetic object experiences a force.



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.



Where does attraction occur?



Where does attraction occur?

Between opposite (unlike) poles of two magnets.



Where does repulsion occur?



Where does repulsion occur?

Between like poles of two magnets.



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.
- The lines never touch, cross or overlap.



How is the strength of a magnet displayed in a diagram?



How is the strength of a magnet displayed in a diagram?

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



What do the arrows on field lines represent?



What do the arrows on field lines represent?

The direction of the force that would be experienced by the north pole of a magnet placed in the field.



What is a permanent magnet?



What is a permanent magnet?

An object which always has poles, and is therefore always magnetic.



What is an induced magnet?



What is an induced magnet?

A magnetic material which does not have fixed poles. They can be induced to become magnets (giving them poles) by placing them in a magnetic field, but they lose their magnetisation when the field is removed.



Explain how compasses work



Explain how compasses work

When placed in the Earth's magnetic field, the north pole of a magnetic compass points towards the Earth's north pole.



What do compasses provide evidence for?



What do compasses provide evidence for?

That the core of the Earth is magnetic.



What is the difference between Earth's magnetic and geographic poles?



What is the difference between Earth's magnetic and geographic poles?

Geographic north is at the top of a globe.

Magnetic north is at the bottom of a globe, meaning magnetic south is at the top. This is why the north poles of compasses point towards the north pole (it is the magnetic south).



What is produced around a current carrying wire?



What is produced around a current carrying wire?

A magnetic field.



How can you determine the direction of a magnetic field around a wire?



How can you determine the direction of a magnetic field around a wire?

Using the Right Hand Grip Rule. Produce a thumbs-up shape with your right hand and point your thumb in the direction of the flow of current. The field lines wrap around in the direction of your fingers.



What is a solenoid?



What is a solenoid?

A coil of wire with a magnetic field, which can be used as an electromagnet.



How does coiling a wire affect the magnetic field?



How does coiling a wire affect the magnetic field?

It increases the field strength, as the magnetic fields of each turn of wire are added together.



How can you increase the strength of a solenoid magnet?



How can you increase the strength of a solenoid magnet?

- Using an iron core to carry field lines (as they travel more easily through metal than air).
- Increase the number of turns in the coil.
- Increase the current.



Describe how a loudspeaker works (Higher)



Describe how a loudspeaker works (Higher)

- Current flows into a coil, producing a magnetic field.
- The field interacts with a field from a permanent magnet in the loudspeaker.
- The coil experiences a force, causing it to move.
- The movement of the coil causes the loudspeaker cone to move, producing pressure variations which produces sound.

