

WJEC Wales Physics GCSE

1.9 - Electromagnetism

Flashcards

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At which part of a magnet are the magnetic forces strongest?



At which part of a magnet are the magnetic forces strongest?

The poles of the magnet.



What happens when two magnets are brought close to each other?



What happens when two magnets are brought close to each other?

They exert a force on each other.



What type of force is exerted if two like poles of a magnet are brought near each other?



What type of force is exerted if two like poles of a magnet are brought near each other?

A repulsive, non-contact force.



What type of force is exerted if two unlike poles of a magnet are brought near each other?



What type of force is exerted if two unlike poles of a magnet are brought near each other?

An attractive, non-contact force.



What is a magnetic field?



What is a magnetic field?

The region surrounding a magnet where another magnet or magnetic material experiences a non-contact force.



What is produced when current flows through a conducting wire?



What is produced when current flows through a conducting wire?

A magnetic field is produced around the wire.



How do you work out the direction of the field around a current carrying wire?



How do you work out the direction of the field around a current carrying wire?

Using the right hand grip rule.



What determines the strength of the magnetic field around a current-carrying wire?



What determines the strength of the magnetic field around a current-carrying wire?

- The magnitude of the current flowing through the wire
- The coils around the wire
- The distance from the wire



What is a solenoid?



What is a solenoid?

A coil of wire which when current passes through creates a strong magnetic field.



Describe the magnetic field found inside a solenoid.



Describe the magnetic field found inside a solenoid.

Strong and uniform.



What is an electromagnet?



What is an electromagnet?

- A solenoid with an added iron core
- Adding the iron core increases the strength of the magnetic field



What is the motor effect?



What is the motor effect?

When a force is exerted between a magnetic field and a current-carrying conductor placed in that field.



What rule is used to determine the force experienced due to the motor effect?



What rule is used to determine the force experienced due to the motor effect?

Fleming's Left-Hand Rule



When using Fleming's left hand rule
what does the forefinger represent?



When using Fleming's left hand rule what does the forefinger represent?

The **forefinger** points in the direction of the magnetic **field**.



When using Fleming's left hand rule
what does the second finger represent?



When using Fleming's left hand rule what does the second finger represent?

The second finger points in the direction of **current flow** in the conductor.



What factors affect the size of the force on a current-carrying wire in a magnetic field?



What factors affect the size of the force on a current-carrying wire in a magnetic field?

- The magnitude of the current flowing through the conductor.
- The strength of the magnetic field that the conductor is placed in.



If the direction of current in a current-carrying wire placed in a uniform magnetic field is reversed, what happens to the force?



If the direction of current in a current-carrying wire placed in a uniform magnetic field is reversed, what happens to the force?

The direction of the force is reversed.



If the strength of the current in a current-carrying wire placed in a uniform magnetic field is increased, what happens to the force?



If the strength of the current in a current-carrying wire placed in a uniform magnetic field is increased, what happens to the force?

The strength/magnitude of the force is increased.



What criteria must be met for the equation linking force, magnetic flux density, current and length to apply?



What criteria must be met for the equation linking force, magnetic flux density, current and length to apply?

The conductor must be at right-angles to the magnetic field it is placed in.



What is the equation linking force, magnetic flux density, current and length?



What is the equation linking force, magnetic flux density, current and length?

$$F = B I L$$

Force (N) = magnetic field strength (T) x
current (A) x length (m)



What equation is used to link the voltage and number of turns on the coils of a transformer?



What equation is used to link the voltage and number of turns on the coils of a transformer?

$$\frac{V_1}{V_2} = \frac{N_1}{N_2}$$

