Magnetism and Electromagnetism

AP Physics 2 · Vocabulary in context

Word	Example
Ferromagnetic /ˌferəməgˈnetɪk/	Iron is **ferromagnetic**, so a magnet attracts it strongly.
magnetic domains /mægˈnetɪk dəˈmeɪnz/	In iron, the **magnetic domains** line up when a magnet is near.
permanent magnets /ˈpɜːmənənt ˈmægnɪts/	Fridge magnets are **permanent magnets**.
Paramagnetic /ˌpærəməgˈnetɪk/	Aluminium is **paramagnetic**: a magnet attracts it very weakly.
Diamagnetic /ˌdaɪəməgˈnetɪk/	Water is **diamagnetic**: a magnet pushes it away very weakly.
permeability /ˌpɜːməˈbɪlɪti/	Iron has a high **permeability**, so it makes a magnetic field much stronger.
permeability of free space	The **permeability of free space** μ_0 is a fixed constant. μ_0
magnetic field /mægˈnetɪk fiːld/	A magnet has a **magnetic field** around it.
Magnetic field lines /mægˈnetɪk fiːld laɪnz/	**Magnetic field lines** never cross each other.
north pole /nɔːθ pəʊl/	Field lines leave a magnet at its **north pole**.
south pole /saʊθ pəʊl/	Field lines enter a magnet at its **south pole**.
pole /pəʊl/	Cutting a magnet never gives a single **pole**.

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magnetic dipole /mægˈnetɪk ˈdaɪpəʊl/	A bar magnet is a **magnetic dipole**, with a north and a south pole.
magnetic force /mægˈnetɪk fɔːs/	A **magnetic force** acts on a charge moving across a magnetic field.
perpendicular /ˌpɜːpənˈdɪkjʊlə/	The wall is **perpendicular** to the floor.
right-hand rule /raɪt hænd ruːl/	Use the **right-hand rule** to find the force on a positive charge.
uniform magnetic field	In a **uniform magnetic field** the field lines are parallel and evenly spaced.
stationary /ˈsteɪʃənəri/	The second cart was **stationary** before the collision.
parallel /ˈpærəlel/	**Parallel** lines have equal gradients and never meet.
centripetal force /senˈtrɪpɪtl fɔːs/	The string gives the **centripetal force** to the spinning ball.
mass spectrometers	**Mass spectrometers** separate ions by the radius of their circles.
current-carrying wire	A perpendicular magnetic field pushes a **current-carrying wire** sideways.
solenoid /ˈsəʊlənɔɪd/	A **solenoid** is a long coil of wire.
bar magnet /bɑː ˈmægnɪt/	A **bar magnet** has a north pole and a south pole.
electromagnets /ɪˌlektrəʊˈmægnɪts/	**Electromagnets** can be switched on and off.
motors	Electric **motors** use the force on a current-carrying wire.

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compass /ˈkʌmpəs/	A **compass** shows sailors which way is north.
flux linkage /flʌks ˈlɪŋkɪdʒ/	**Flux linkage** is the flux times the number of turns.
emf /emf/	An **emf** is induced when the flux through a coil changes.
electromagnetic induction /ɪˌlektrəʊməgˈnetɪk ɪnˈdʌkʃn/	Moving a magnet in a coil causes **electromagnetic induction**.
magnetic flux /mægˈnetɪk flʌks/	**Magnetic flux** is the flux density times the area.
normal /ˈnɔːml/	The **normal** is a line at 90° to the surface. 90°
Faraday's law /ˈfærədeɪz lɔː/	**Faraday's law** says faster change gives a bigger e.m.f.
induced emf	The **induced emf** is larger when the flux changes faster.
Lenz's law /ˈlentsɪz lɔː/	**Lenz's law** says the current opposes the change.
induced current /ɪnˈdjuːst ˈkʌrənt/	An **induced current** flows when the magnet moves.
generators	**Generators** turn kinetic energy into electrical energy.
transformers	**Transformers** change the size of an alternating voltage.
conducting rod	A **conducting rod** sliding on rails sweeps out area.
motional emf /ˈməʊʃənl emf/	A metal wing moving through Earth's field has a small **motional emf**.

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Word	Example
resistor /rɪˈzɪstə/	The **resistor** limits the current.
dissipates	The resistor **dissipates** 0.080 W as heat. 0.080 W

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