












SP12 Magnetism and the Motor Effect







SP12a Magnets and magnetic fields

Step	Learning outcome	Had a look	Nearly there	Nailed it!
 3 rd	Describe how magnets affect each other.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 4 th	Explain the difference between permanent and induced magnets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 4 th	Describe the uses of permanent and temporary magnetic materials.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 4 th	Describe the shapes of magnetic fields, including variations in strength.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 4 th	Describe how the shape of magnetic fields can be shown using plotting compasses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 5 th	Explain how a magnetic compass can be used as evidence for the Earth's magnetic core.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SP12b Electromagnetism













Step	Learning outcome	Had a look	Nearly there	Nailed it!
 6 th	Recall that a current can create a magnetic effect.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 th	Relate the shape and direction of the magnetic field around a straight wire to the direction of the current.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 6 th	Recall the factors that affect the strength of the magnetic field around a wire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 th	Describe the magnetic field inside and outside a coil of wire carrying a current.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 th	Explain the shape and strength of the magnetic field around a solenoid.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SP12c Magnetic forces









Step	Learning outcome	Had a look	Nearly there	Nailed it!
 6 th	H Recall that forces are produced when a current flows in a magnetic field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 th	H Explain what causes the forces produced when a current flows in a magnetic field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 6 th	H Recall Fleming's left-hand rule.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 7 th	H Use Fleming's left-hand rule.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 th	H Use the formula relating force, magnetic field strength, current and length.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 8 th	H Explain how the force on a conductor in a magnetic field is used to cause rotation in electric motors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SP13 Electromagnetic Induction








SP13a Electromagnetic induction

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	 Describe how to produce an electric current by induction on a small scale.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	 Describe how electromagnetic induction is used in alternators and dynamos.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	 Describe how different factors affect the size and direction of an induced current.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	 Describe how the magnetic field produced by an induced potential difference opposes the original change.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	 Explain how microphones work in terms of changing pressure variations into variations in electric current.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	 Explain how loudspeakers change variations in current to variations in air pressure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SP13b The national grid

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	 Explain how a transformer works.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	 Recall that transformers can change the voltage of an alternating current.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	 Use the turns ratio equation for transformers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Describe how the national grid transmits electricity around the country.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Explain why step-up and step-down transformers are used in the national grid.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SP13c Transformers and energy

Step	Learning outcome	Had a look	Nearly there	Nailed it!
	Recall the law of conservation of energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Recall that the power of an electric current is given by the current multiplied by the voltage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Use the power equation for transformers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	 Recall and use equations relating current, voltage, power and resistance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	 Use equations to explain the advantages of power transmission in high-voltage cables.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>