

ELECTRIC CIRCUITS

Opportunities for Breadth and Challenge:			
Links to Sequencing for Learning: This unit links to previous work on Y8 P1 Electricity and magnetism This unit prepares pupils for work in CP11 Electromagnetic Induction			
Section	What we are learning (key knowledge)	Key words	Assessment
1	How does the structure of atoms affect the flow of electric current? What are the names and symbols of components used in electric circuits? What are the differences between series and parallel circuits?	Atom Nucleus Protons Neutrons Electrons	Prior knowledge
2	How is electric current measured? What happens to the electric current at a junction in the circuit? What is potential difference and how do you measure it?	Series Parallel Amperes Ammeter	Retrieval Qs of keywords
3	What is a coulomb? What is the connection between the electric current and the amount of charge that flows in a circuit? What is the equation that relates electric charge, potential difference and the energy transferred in a circuit?	Potential Difference Voltage Volts Voltmeter	Homework: independent research for poster
4	What is electrical resistance? What is the connection between voltage, current and resistance? What are the different effects of adding resistors in series and parallel?	Resistance Ohms Direct Proportion	MUM: poster
5	How does potential difference affect current and resistance in fixed resistors, lamps and diodes? How do light intensity and temperature affect resistance in LDRs and thermistors? How are circuits used to explore resistance in lamps, diodes, thermistors and LDRs?	Diodes Dissipated Power Watts	
6	<i>Construct electrical circuits to a) investigate the relationship between potential difference, current and resistance for a resistor and filament lamp and b) test series and parallel circuits using resistors and filament lamps.</i>		
7	What are the advantages and disadvantages of the heating effect of a current? How can the energy transfer that causes the heating effect be explained? How can unwanted energy transfer be reduced in wires?	Thermal Energy Direct current ACCircuit breaker	
8	What is power and what units are used to measure it? How is power related to the energy used in joules? How can you calculate power when you know current, potential difference and/or resistance?		
9	How is energy transferred from electrical cells or batteries to motors and heating devices? What is the difference between direct and alternating, for both current and voltage? What is the voltage and frequency of the UK domestic electricity supply?		
10	What is the difference between the live and the neutral wires? How do earth wires and fuses make circuits safer? What are potential differences between the live, neutral and earth wires?		

11	Revision		Class assessment sheet
12	End of Unit Test		EUT
13	Test Feedback		Test feedback sheet

MAGNETISM AND THE MOTOR EFFECT AND ELECTROMAGNETIC INDUCTION

Opportunities for Breadth and Challenge:			
Links to Sequencing for Learning: This unit links to previous work on Y8 P1 Electricity and magnetism, Y10 P9 Electric circuits This unit prepares pupils for work in GCSE paper			
section	What we are learning (outcomes)	Key words	Assessment
1	How are magnets used? What shape are magnetic fields and how can they be plotted? What is the evidence that the Earth has a magnetic field?	permanent magnet, magnetic materials, magnetic field, induced magnet, plotting compass	Prior knowledge
2	How is the magnetic field around a wire related to the current? What factors affect the strength of the magnetic field around a wire? How does the magnetic field around a wire change when the wire is made into a coil?	Solenoid, electromagnet, temporary magnet	Retrieval Qs of keywords
3	How can electricity and magnetism combine to produce forces? How is the force on a wire in a magnetic field used to make an electric motor turn? How can we calculate the size of the force produced by a current in a magnetic field?	Motor effect, Flemings Left hand rule, magnetic flux density, tesla	Homework: independent research for poster
4	How can you calculate the power of an electric current? How do transformers follow the law of conservation of energy? How can you calculate the current and voltage produced by a transformer?	Transformer, potential difference, electromagnetic induction, induces, primary coil, secondary coil, electric power	MUM: poster
5	How is electricity transmitted around the country? How do transmitters work? What are the factors that affect the size and direction of an induced potential difference?	National grid, transmission lines, step up transformer, step down transformer, alternation current	
6	Revision		Class assessment sheet
7	End of Unit Test		EUT
8	Test Feedback		Test feedback sheet

Particle Models & Forces and Matter

Opportunities for Breadth and Challenge:			
Links to Sequencing for Learning: This unit links to previous work on Y8 P1 Electricity and magnetism, Y10 P9 Electric circuits			

This unit prepares pupils for work in GCSE paper			
Section	What we are learning (outcomes)	Key words	Assessment
1	<p>CP12a Particles and density</p> <ul style="list-style-type: none"> How do the particle arrangements in solids, liquids and gases explain their properties? What happens to particles when a substance changes state? <p>How can you calculate the density of a substance?</p>	Sublimation, states of matter, kinetic theory, compressed, change of state, conserved, physical change, chemical change, density	Prior knowledge
2	<p>CP12ba Core practical – Investigating densities.</p>		Retrieval Qs of keywords
3	<p>CP12b Energy and change of state.</p> <ul style="list-style-type: none"> What effect does heating a substance have on the substance? How can we reduce unwanted energy transfers? <p>What do specific heat capacity and specific latent heat mean?</p>	Thermal energy, temperature, specific latent heat	Homework: independent research for poster
4	<p>CP12c investigating water.</p> <p><i>Investigate the properties of water by determining the specific heat capacity of water and obtaining a temperature-time graph for melting ice.</i></p>		MUM: poster
5	<p>CP12d Gas temperature and pressure</p> <ul style="list-style-type: none"> What causes gas pressure? How does the temperature of a gas affect its pressure? What is the difference between the kelvin and Celsius temperature scales? 	Kinetic energy, pascals, absolute zero, kelvin temperature scale, kelvin	
6	<p>CP13a Bending and stretching.</p> <ul style="list-style-type: none"> How do forces cause objects to change shape? What is the difference between elastic and inelastic distortion? What is the relationship between force and extension when an object is deformed? 	Elastic, linear relationship, directly proportional, non-linear	
7	<p>CP13a Core practical – Investigating springs.</p> <ul style="list-style-type: none"> <i>Investigate the extension and work done when applying forces to a spring.</i> 		
8	<p>CP13b Extension and energy transfers.</p> <ul style="list-style-type: none"> What is the spring constant of a spring? What is the equation that relates a force and extension of a spring? How do we calculate the work done in stretching a spring? 	Spring constant, work done	
9	Revision		Class assessment sheet
10	End of Unit Test		EUT
11	Test Feedback		Test feedback sheet