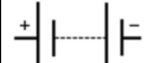
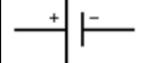
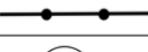
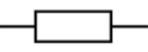


Knowledge Organiser: Year 7: - Electricity

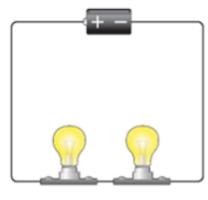
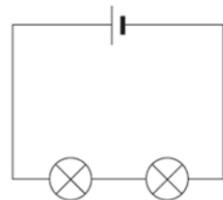
Section 1: Key Words

Electrical Conductor	Will allow electricity to flow through it
Electrical insulator	Will not allow electricity to flow through it
Battery	Two or more cells joined together
Cell	Device used to generate electricity usually by transforming chemical energy into electrical
Electrical component	Part of an electrical circuit e.g. bulb or battery
Ammeter	Device used to measure the current in the circuit
Voltmeter	Device used to measure the potential difference (voltage) in a circuit
Volt	The unit voltage is measured in
Amp	The unit current is measured in
Ohm	The unit resistance is measured in
In series	Components that are connected one after another on the same loop of the circuit are connected in series
In parallel	Components that are connected on separate loops are connected in parallel
Current	a flow of electric charged particles called electrons
Potential Difference (Voltage)	the difference in electrical energy between two points of a circuit
Resistance	When something tries to stop the flow of electrons around a circuit

Section 2: Electrical Component Symbols

Component	Symbol
battery	
Cell	
Bulb	
Switch (open)	
Switch (closed)	
Ammeter	
Voltmeter	
Motor	
Buzzer	
Resistor	
wire	

Section 3: Series and Parallel

	Series	Parallel
Description	Components are connected one after another on the same loop	Components are connected on separate loops
Diagram		
Voltage	The voltage is shared between components	Every component has the same value
Current	Every component has the same value	The current is shared between each loop.

Section 4: Advantages and Disadvantages of Series and Parallel

	Series	Parallel
Advantages	<ul style="list-style-type: none"> • Easy to use • Easy to add more power to the circuit • Doesn't over heat easily • Components all have same current 	<ul style="list-style-type: none"> • Every unit gets an equal amount of voltage • Easy to connect and disconnect components • If a fault occurs on one loop it won't affect other loops • Easy to switch different components on and off using the same circuit
Disadvantages	<ul style="list-style-type: none"> • If one component breaks the whole circuit won't work • Increasing number of components increases resistance 	<ul style="list-style-type: none"> • Lots of wires • Cannot increase voltage • Complexity of resistance in different branches • Varying current in the branches

Section 6: Current, Voltage and Resistance

	Current	Voltage (potential difference)	Resistance
Description	Flow of electrons around the circuit	The difference in electrical energy between two parts of a circuit	How hard it is for the current to flow in a circuit
Symbol	I	V	R
How to measuring it	Ammeter (in series)	Voltmeter (in parallel)	Can't be measured directly. Can be worked out if voltage and current are known
Units	Amps (A)	Volts (V)	Ohms (Ω)

Section 6: Calculating resistance

Description	How hard it is for the current to flow in a circuit
Units	Ohms (Ω)
Equation	Resistance = Voltage/Current
Triangle	
Example	<p>The voltage in a bulb is 1.5V. The current flowing through the bulb is 0.75 A. What is the resistance?</p> <p>Resistance = Voltage/Current Resistance = 1.5/0.75 Resistance = 2Ω</p>

Section 8: Safety

Turn off the power if you're making or changing your circuits
Set the voltage to the lowest level that will allow your circuit to work
Don't use any components with exposed wires
Keep electrical components away from water
Don't get any metal objects (jewellery) away from circuits
The voltage in your homes is lower than that in overhead cables to protect you



This hazard symbol is used to warn of high voltage. You should not touch anything with this symbol on.