

Name _____ Class _____ Date _____

Lesson	Aiming for 4		Aiming for 6		Aiming for 8	
P4.1 Electrical charges	I can label the constituents on an atom (proton, neutron, and electron) on a diagram.	<input type="checkbox"/>	I can compare the electrical properties of protons, neutrons, electrons, and ions.	<input type="checkbox"/>	I can describe the shape of the field and lines of force around a point charge or charged sphere.	<input type="checkbox"/>
	I can describe the interactions between positively and negatively charged objects.		I can use the concept of electric fields to explain why charged objects interact.	<input type="checkbox"/>	I can apply the concept of electric fields to explain in detail why the force between charged objects decreases with distance.	<input type="checkbox"/>
	I can state that objects can become electrically charged by the action of frictional forces.		I can describe how objects become charged in terms of electron transfer.	<input type="checkbox"/>	I can explain why sparks can be produced by charged materials in terms of charge build-up.	<input type="checkbox"/>
P4.2 Electric circuits	I can identify circuit components from their symbols.	<input type="checkbox"/>	I can describe the operation of a variable resistor and a diode and their effects on current.	<input type="checkbox"/>	I can explain the nature of an electric current in wires in terms of electron behaviour.	<input type="checkbox"/>
	I can draw and interpret simple circuit diagrams.		I can calculate the charge transferred by a steady current in a given time.		I can perform a range of calculations, including rearrangement of the equation $Q=It$.	
	I can construct a simple electrical circuit.		I can construct an electrical circuit and accurately measure the current.		I can measure the current in a circuit accurately and use it to calculate the rate of flow of electrons.	

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P4.3 Potential difference and resistance	I can state that resistance restricts the size of a current in a circuit.	<input type="checkbox"/>	I can calculate the potential difference.	<input type="checkbox"/>	I can describe potential difference in terms of work done per unit charge.	<input type="checkbox"/>
	I can state Ohm's law and describe its conditions.	<input type="checkbox"/>	I can calculate the resistance of a component.	<input type="checkbox"/>	I can rearrange equations for resistance and potential difference.	<input type="checkbox"/>
	I can measure the current and potential difference in a circuit to determine the resistance.	<input type="checkbox"/>	I can measure the effect of changing the length of a wire on its resistance in a controlled experiment.	<input type="checkbox"/>	I can investigate a variety of factors that may affect the resistance of a metal wire, such as the current through it, length, cross-sectional area, and metal used.	<input type="checkbox"/>
P4.4 Component characteristics	I can identify the key characteristics of electrical devices.	<input type="checkbox"/>	I can describe the resistance characteristics of a filament lamp.	<input type="checkbox"/>	I can explain the resistance characteristics of a filament lamp in terms of electrons and ion collisions.	<input type="checkbox"/>
	I can identify components from simple $I-V$ graphs.	<input type="checkbox"/>	I can describe the characteristics of diode and light-emitting diode.	<input type="checkbox"/>	I can determine the resistance of a component based on information extracted from an $I-V$ graph.	<input type="checkbox"/>
	I can state the operation of a diode in simple terms.	<input type="checkbox"/>	I can investigate the resistance characteristics of a thermistor and a LDR.	<input type="checkbox"/>	I can compare the characteristics of a variety of electrical components, describing how the components can be used.	<input type="checkbox"/>

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P4.5 Series circuits	I can state that the current in any part of a series circuit is the same.	<input type="checkbox"/>	I can find the potential difference across a component in a circuit by using the p.d. rule.	<input type="checkbox"/>	I can explain, in detail, why the current in a series circuit is the same at all points by using the concept of conservation of charge (electrons).	<input type="checkbox"/>
	I can calculate the potential difference provided by cell combinations.	<input type="checkbox"/>	I can calculate the current in a series circuit containing more than one resistor.	<input type="checkbox"/>	I can analyse a variety of series circuit to determine the current through, p.d. across, and resistance of combinations of components.	<input type="checkbox"/>
	I can calculate the total resistance of two resistors placed in series.	<input type="checkbox"/>	I can investigate the resistance of series circuits with several components.	<input type="checkbox"/>	I can evaluate in detail the investigation of series circuits and explain discrepancies.	<input type="checkbox"/>
P4.6 Parallel circuits	I can identify parallel sections in circuit diagrams.	<input type="checkbox"/>	I can measure the p.d. across parallel circuits and explain any discrepancies.	<input type="checkbox"/>	I can analyse parallel circuits in terms of current loops.	<input type="checkbox"/>
	I can state the effect of adding resistors in parallel on the size of the current in a circuit.		I can describe the effect on the resistance in a circuit of adding a resistor in parallel.		I can calculate the current at any point in a circuit.	
	I can state that the p.d. across parallel sections of a circuit is the same.		I can investigate the effect of adding resistors in parallel on the size of the current in a circuit.		I can evaluate in detail an investigation into the effect of adding resistors in parallel on a circuit.	