



Progression of skills science - Electricity

Threshold Concepts This concept involves understanding circuits and their role in electrical applications.	Year 2	Year 4	Year 6
<p><i>KS1</i></p> <ul style="list-style-type: none"> Identify common appliances that run on electricity. Construct a simple series electrical circuit. <p><i>LKS2</i></p> <ul style="list-style-type: none"> Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors. 	<ul style="list-style-type: none"> Electricity is a form of energy, used for lighting, heating, making sound and making machines and appliances work. Pylons and cables carry electricity through the countryside, some electricity cables in busy cities are buried underground Appliances are devices that run on electricity and they should be used safely (includes, no frayed wires, avoid spillages and keep away from water, not putting objects into sockets Compare life in a village that has no electricity A circuit is a complete path around which electricity can flow Circuits contain components like wires, switches and bulbs. 	<ul style="list-style-type: none"> Electricity is a form of energy, used for lighting, heating, making sound and making machines and appliances work. Some appliances run on electricity; some plug into the mains electricity and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. A series circuit is where all the components of the circuits are joined in one loop. If one part of the loop is incomplete, then the circuit will not work Names of components include cells, wires, bulbs/ lamps, switches and buzzers A cell is a single unit, and a battery is a collection of cells One way to test to see if a circuit is complete is to use a bulb/lamp, if the lamp turns on then the circuit is complete. 	<ul style="list-style-type: none"> Recognise circuit symbols in a simple circuit- identify the simple circuit used in a hand torch Electric current is measured in amperes, current is a flow of charge Associate the brightness of a lamp or volume of a buzzer with the potential difference in a circuit Investigate the brightness of a bulb if the PD is increased or the number of bulbs increased in a series circuit Investigate how the length of wire affects the brightness of a bulb. Potential difference is measured in volts Resistance, measured in ohms, as the ratio of potential difference (p.d.) to current Differences in resistance between conducting and insulating components (quantitative)



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<p>UKS2</p> <ul style="list-style-type: none">• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.• Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.• Use recognised symbols when representing a simple circuit in a diagram.		<ul style="list-style-type: none">• Switches open and close circuits. When a switch is open the bulb/lamp will not light up as the series circuit is incomplete.• Wires are made from metals as they are good conductors of electricity e.g., iron, copper and steel• Insulators are materials that do not allow electricity to pass through them easily e.g., plastic, wood, rubber and glass.• Thomas Edison invented the first practical incandescent light bulb	<ul style="list-style-type: none">• Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects• The idea of electric field, forces acting across the space between objects not in contact
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Progression of skills to KS3 are detailed on electricity/ trust science sheets

Links from Reception Development Matters are detailed on the Reception Termly Planning Document