

## Year 8 Electricity and Energy Transfer

15 Lessons

| Stage      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| Emerging   | <p>You can state the definition of energy and describe how it is calculated.</p> <p>You can state how energy is transferred from a hot object to a cooler one.</p> <p>You can recall the basic units of energy (J) and power (W).</p> <p>You can state how energy changes when an object changes state.</p> <p>You can recall that energy as a quantity cannot be created or destroyed – it can only be converted from one form to another.</p> <p>You state that electric current is measured in amperes (A).</p> <p>You can state that voltage and potential difference is measured in Volts (V).</p> <p>You can state that resistance is measured in Ohms.</p> <p>You can describe electricity as a flow of charge between two points.</p> <p>You can give a basic definition of static electricity.</p>                                                |
| Developing | <p>You describe how a simple machine can give a bigger force from a small movement.</p> <p>You understand what series and parallel circuits are and how to connect components in series and parallel.</p> <p>You can explain how voltage is shared between components in a series circuit.</p> <p>You can understand that magnetic force is between two objects that do not have to be in contact with each other.</p> <p>You can compare the amount of energy transferred using appropriate units such as J, kJ and kWh</p> <p>You can explain what internal energy.</p> <p>You can describe ways in which energy is transferred.</p>                                                                                                                                                                                                                     |
| Secure     | <p>You can describe how energy is transferred when objects collide, an object is dropped, is stretched or undergoes chemical change.</p> <p>You can compare the initial and final conditions of a system and describe changes in that system in terms of energy conversions.</p> <p>You can understand that current adds when branches of parallel circuits meet.</p> <p>You can explain that static electricity is caused by the transfer of electrons when objects are rubbed together.</p> <p>You can understand that a current can produce a magnetic field and vice versa.</p> <p>You understand how to calculate domestic fuel use and compare the rates of usage for different components and appliances.</p> <p>You can explain that total energy is the same before and after a change.</p> <p>You can justify the need to reduce energy use.</p> |
| Excellence | <p>You can describe intermediate processes to explain energy changes in a system and how these lead from starting conditions to the final conditions.</p> <p>You can describe what endothermic and exothermic reactions are.</p> <p>You can describe the differences in resistance between conducting and insulating components.</p> <p>You can explain how internal energy is stored in materials.</p> <p>You can compare the use and efficiency of electrical appliances and make judgements about the merits long term usage.</p> <p>You can calculate voltage, current and resistance in series and parallel circuits.</p>                                                                                                                                                                                                                             |