Colney Heath School ~ Science		
Topic: Electricity	**Year: 4**	**Physics**

What should I already know?

An object is made from/of a material. Metal is a material from which objects can be made. Matter (stuff) is made from tiny building blocks. Energy comes in different forms and can be neither created nor destroyed, only changed from one form to another. Electricity is a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices. Sources of light and sound may need electricity to work.

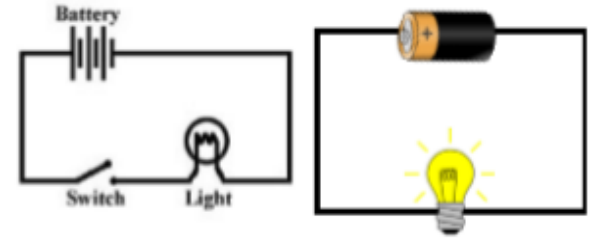
Vocabulary

Switch	A small control for an electrical device which you use to turn the device on or off.
Wires	A long thin piece of metal that is used to fasten things or to carry electric current.
Conductor	A substance that heat or electricity can pass through or along.
Insulator	A non-conductor of electricity or heat.
Buzzer	An electrical device that makes a buzzing sound.
Mains	Where the supply of water, electricity, or gas enters a building.
Fuel	A substance such as coal, oil, or petrol that is burned to provide heat or power.

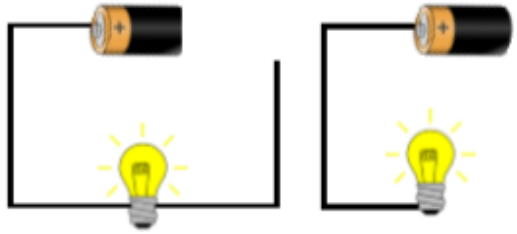
Diagrams

Electrical Conductors	Electrical Insulators
Copper	Rubber
Iron	Wood
Steel	Plastic
Silver	Paper
Gold	

Diagrams



These are complete **circuits** - they have a **battery (cell)** and a **component (bulb).**
The **wires** are placed in the right places of the **battery** for the **circuit** to work.



These **circuits** will not work as they are incomplete.

Vocabulary

Electricity	Electricity is created by generators, which can be powered by gas, coal, oil, wind or solar. The electrical energy can be converted into other types of energy such as light, heat, movement or sound.
Circuit	A complete route, which an electric current can flow around.
Current	A flow of electricity through a wire.
Energy	Energy is how things change and move and a force is needed to transfer the energy. It's everywhere around us and takes all sorts of forms. It takes energy to cook food, to drive to school, and to jump in the air.
Battery	Small devices that provide power by converting chemical energy into electrical energy. A battery is a collection of cells.
Cell	A cell is a single unit (of a battery) that converts chemical energy into electrical energy.
Appliances	A device or machine in your home that you use to do a job such as cleaning or cooking. Appliances are often electrical.
Component	The parts that something is made of.
Device	An object that has been invented for a particular purpose.
Socket	A device on a wall that you can plug electrical equipment into.

The Big Picture	By the end of our project we will know that
Physics P1: The universe follows unbreakable rules that are all about forces, matter and energy. P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe. P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.	Electrical energy is one of many forms of energy. Electricity can be generated using energy from natural sources such as the Sun, oil, water and wind. Current electricity is the flow of charged particles called electrons around a circuit. Electrical current flows well through some materials, called electrical conductors, and poorly through other materials, called electrical insulators. Conductors have free electrons and when electrical current flows around a conductor, the electrons move. Electrical conductivity (how well a material conducts electricity) is an example of a property. Metals are good electrical conductors. A chemical reaction inside a cell produces the charged particles that can flow around a circuit. More than one cell lined up to work together is called a battery. Electrical current can flow if there is a complete circuit. Wires – which contain a conductor inside them, usually made of metal – can allow electrical current to flow around a circuit. When electrical current flows through a circuit, components within that circuit – such as buzzers, which make a noise, and bulbs, which emit light – begin to work. A switch functions by completing or breaking a complete circuit. Exposure to high levels of electrical current can be dangerous.

Common electrical hazards

1. Overloading a plug extension socket.
2. Exposed wires.
3. Damaged wall sockets.
4. Wires left along the carpet for people to trip over.
5. Placing metal into electrical appliances or open sockets.
6. Electrical appliances and wires near water.

NOTE: WATER IS AN EXCELLENT ELECTRICAL CONDUCTOR SO IT CAN BE VERY DANGEROUS TO HAVE ELECTRICAL DEVICES NEAR WATER

- Some **appliances** use **batteries** and some use **mains electricity**.
- **Batteries** come in different sizes depending on how much and for how long the **appliance** is used.
- Common **appliances** that use **electricity**.

Electricity is dangerous, so be careful when using electrical appliances.