Uplands Manor Primary School - Science Unit Organiser

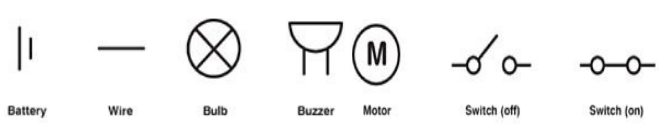
Science Topic:	Electricity and Light		Year 6		

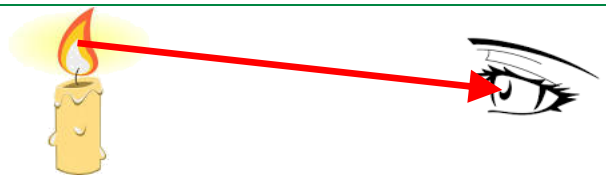
What? (Key Vocabulary)

Spelling	Definition/Sentence
Generator	A machine that make electrical energy
Component	A part of something (a part of a circuit)
Voltage	*Voltage* is a measure of the difference in electrical energy between two parts of a circuit
Shadow	A shadow is a dark area where light from a light source is blocked by an opaque object
Refraction	When light travels from air into water, it slows down, causing it to change direction slightly This change of direction is called refraction

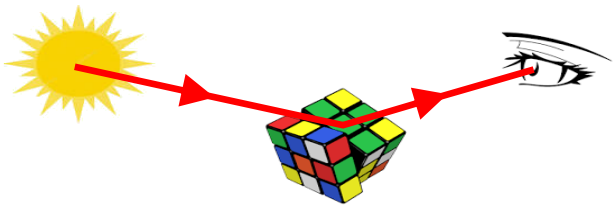
Diagrams and Symbols

Electrical symbols for circuit diagrams





Above: Light travels directly from the light source (candle flame) to the eye.



Here the light goes form the light source, bounces off the object and into your eyes, so that you see the object.

Recommended Experiments

A minimum of two experiments should take place during this unit of work with one final written outcome linked to the scientific enquiry skills and approaches used.

	Investigating what happens when components in a circuit are changed, recording each circuit and what has been observed
	Comparing and giving reasons for variations in how components function by exploring a range of equipment (different lengths and widths of wire, different sizes of cells, light bulbs, buzzers, motors, switches)
	Explaining that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
	Investigating what happens to a shadow when the torch is moved.

What? (Key Knowledge)

Electricity

What is 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 • Electricity is dangerous, so be careful when using electrical appliances

An electrical circuit

A series circuit (One pathway around the circuit)	• Electricity can flow through the components in a complete electrical circuit • A circuit always needs a power source, such as a battery, with wires connected to both the positive (+) and negative (-) ends (A battery is made from a collection of cells connected together) • A circuit can also contain other electrical components, such as bulbs, buzzers or motors, which allow electricity to pass through • Electricity will only travel around a circuit that is complete (that means it has no gaps)
What is a switch?	• You can use a switch in a circuit to create a gap in a circuit (this can be used to switch it on and off) • When a switch is open (off), there is a gap in the circuit - electricity cannot travel around the circuit • When a switch is closed (on), it makes the circuit complete - electricity can travel around the circuit
Increasing the brightness of a bulb or the volume of a buzzer.	• The more cells that are used in a circuit, the brighter the bulb or louder the buzzer • If one cell is used, the higher its voltage, the more powerful the cell is

What? (Key Knowledge)

Light Sources

We need light in order to see things. When there is no light we say it is dark.

What is a light source?	• A light source is something that makes its own light

More about light

Things you need to know about light	• Light travels in straight lines • Light travels very, very fast - 186,282 miles per second (that's like travelling around the world over 7 times in a second) • If something gets in the way of light, a shadow is formed

Shadows

How is a shadow formed?	• When light from a source is blocked by an opaque object, you get a shadow
How does the size of the shadow change?	• If an object is moved **closer** to the light sources, the **shadow gets bigger** • If an object is moved **further away** from the light source, the **shadow gets smaller**

Builds on: learning in Year 2 - Summer 2 - Unit: Electricity	Learning links	**Leads to:** learning in KS3 - (Year 7) - Physics