



Science Focus:

Electricity

Year 6

Term:

Electricity

What is Electricity?	<ul style="list-style-type: none"> Electricity is the movement of electrons (<i>very small particles</i>) through a conductor. Electrical energy 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.
What is electric current?	<ul style="list-style-type: none"> An electric current is a flow of electric charge. In electric circuits this charge is often carried by moving
What is voltage?	<ul style="list-style-type: none"> Voltage is an force from a power source that can push electrons around a circuit.
What is resistance?	<ul style="list-style-type: none"> Resistance is an electrical quantity that measures how a device or material in a circuit reduces the electric current flow through it.

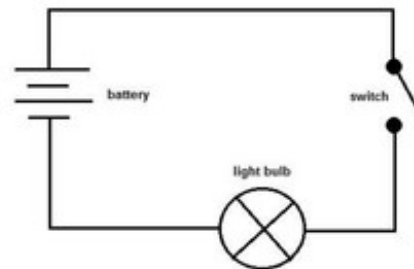
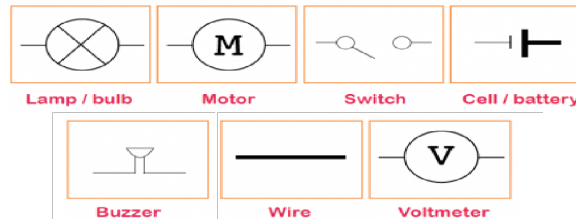
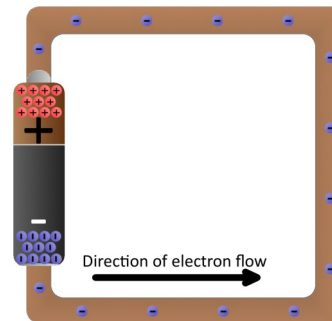
What? (Key Vocabulary)

Spelling	Definition/Sentence
Generator	A machine that make electrical energy
Component	A part of something (a part of a circuit)
Voltage	<i>Voltage</i> is a measure of the difference in electrical energy between two parts of a circuit. It is known as a force.

Energy can be transferred

Electrical energy can be transferred from one store to another. For example, electricity can make light bulbs glow.

Diagrams and Symbols



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.

Working as a Scientist

- Design and make a set of traffic lights or burglar alarm.
- Identify the effects of changing a component in a circuit.
- Create a fairground ride (DT Link) that uses an electrical circuit.



Science Focus:	Light	Year 6	Term:
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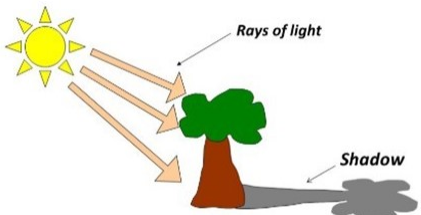
Light

How does **Light** travel?

- Light** travels in a straight line. When you place a torch on a table in a **dark** room, the beam travels in a straight line.
- Reflection** is when **light** bounces off a surface - this changes the direction in which the **light** travels.

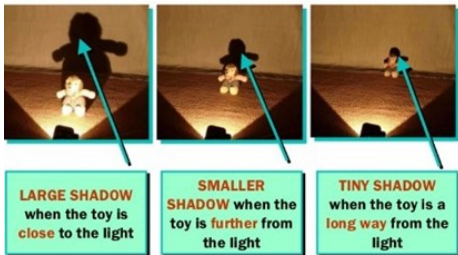
What is the relationship between **light sources** and **shadows**?

- Because **light** travels in straight lines, when there is an **opaque** object blocking the **light**, a **shadow** is formed.
- These **shadows** have the same shape



Size of Shadows

The size of a **shadow** changes as the **light**



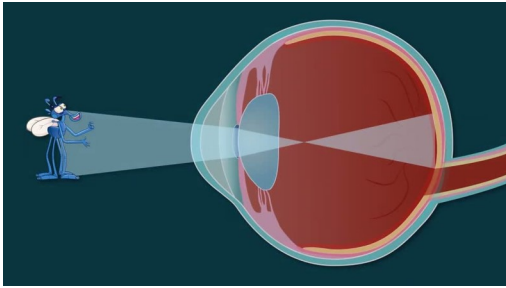
Objects can affect other objects at a distance

All objects have an effect on other objects without being in contact with them. In some cases the effect travels out from the source to the receiver in the form of radiation (e.g. visible light).

Diagrams and Symbols



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



Vocabulary

angle	the direction from which you look at something
dark	the absence of light
dim	light that is not bright
electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for machines
emits	to emit a sound or light means to produce it
light	a brightness that lets you see things.
mirror	a flat piece of glass which reflects light , so that when you look at it you can see yourself reflected in it
opaque	if an object or substance is opaque , you cannot see through it
reflects	sent back from the surface and not pass through it
shadows	a dark shape on a surface that is made when something stands between a light and the surface
source	where something comes from
surface	the flat top part of something or the outside of it
torches	a small electric light which is powered by batteries and which you can carry
translucent	if a material is translucent , some light can pass through it
transparent	If an object or substance is transparent , you can see through it

Working as a Scientist...

What happens when light is **reflected** from different **surfaces**?
 What happens when light is **reflected** from a **mirror**? What happens when the **angle** of the **mirror** (or **light source** changes?)
 Draw diagrams to show how **light** travels and what happens when **light** is **reflected** from a **mirror**.
 Draw diagrams to show how we see.
 Design an experiment to measure **shadow** length by changing a variable. Show your results in a line graph to show the relationship between distance of **light source** and **shadow** length. Explain your findings using scientific vocabulary.

...Working as a Scientist continued

Create **shadow** puppets to show how **light** travels and to demonstrate that a **shadow** has the same shape as the object that casts them.
 Make a periscope and explain how it works using diagrams and scientific vocabulary. Use the idea that **light** appears to travel in straight lines to explain how it works.
 Research how **mirrors** are used in different contexts (e.g. rear view mirrors, on a dangerous bend) and explain why and how they work.
 Explain why objects look bent in water.
 Explore different contexts in which **light** travels including rainbows, colours on soap bubbles and coloured filters.