Knowledge Organiser Year 6
Unit: Electricity

When a light is switched on, you are sending a flow of electrons around the circuit.

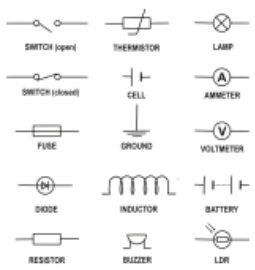
Metals such as copper, aluminium, zinc and gold are good conductors of electricity.

Light bulbs turn electricity into light due to resistance.

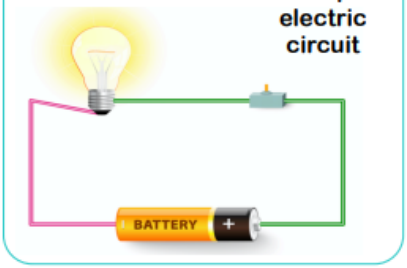
ROCKET WORDS
Learn these words and their definitions.

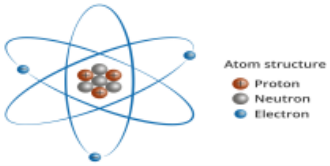
Key Word	Definition
static electricity	Electricity that collects on the surface of an object, which can cause an electric shock.
filament	A thin piece of wire with a high melting point, used in bulbs.
voltage	An electric force which 'pushes' the electric current round the circuit.
insulator	A material which doesn't conduct electricity.
conductor	A material that electricity can flow through easily.
fuse	A safety device on a circuit that can stop current from flowing if it becomes overheated.
component	An individual part in an electronic circuit.
variable resistor	A device which varies the amount of electric current allowed to flow through a circuit.

Electric circuit symbols



A simple electric circuit





FACTOIDS: Can you find out more?

Q1. How is static electricity created?
A1. Friction on an object creates an electric charge.

Q2. How does a wind-up torch work?
It works through a dynamo which turns mechanical energy to electrical energy through a simple electromagnet.

Q3. How are insulators helpful?
They prevent electric flow so you don't receive an electric shock!

Lesson Sequence

1. Explain how objects become charged
2. Describe the parts of an electric circuit
3. Explain how voltage affects bulb brightness
4. Compare electrical conductors and insulators
5. Build a set of traffic lights
6. Explain how variable resistors can work like a switch

Unit: Electricity

This unit will help you explore different types of electricity as well as understanding what makes up a circuit. You will learn about this by studying circuit diagrams and by building your own circuits. You will also think about what materials conduct and which insulate, so you know about safety with electricity. It will also help you learn about the importance of saving energy.
Understanding electricity is important for many careers which involve circuitry and installation of electrical devices. It is also helpful for being able to do quick jobs safely and with knowledge.

Developing Experts

Natural resources which are used in every day life include: water, air, trees and plants, and cotton.

Knowledge Organiser
Properties of Materials

Some insulating materials found in our houses include fibre glass loft insulation, cavity wall filler and double-glazed windows.

ROCKET WORDS
Learn these words and their definitions.

Key Word	Definition
comparative test	Undertaking a test with a controlled variable to help answer questions.
elasticity	The ability of a material to resume its normal shape after being stretched or compressed.
plasticity	The ability for a material to be easily shaped or moulded.
crude oil	A natural oil formed by carbon deposits and organic materials.
perforate	To pierce or puncture something.
extraction	To remove something from its natural setting.
thermal conductivity	The ability of a material or substance to conduct or transfer heat.
inexhaustible	Something unable to be used completely because there's too much of it to be all used up.

Ways to test materials

Hardness
How resistant a material is to scratching and pressure.
Hard materials: hardwood, metal, plastics

Strength
The amount of force needed to break a material.
Strong materials: many metals and woods.

Elasticity
Ability of a material to turn to its original shape after the force is removed
Elastic materials: rubber bands, metal coil springs

Plasticity
Ability to retain the new shape when the force is removed.
Example materials: plasticine, clay.

Absorbency
Ability of a material to soak up liquid.
Absorbent materials: sponge, cotton wool, towel.

Waterproof
Resistant and repellent to a liquid
Waterproof materials: Many rubbers and plastics

Lesson Sequence

1. Describe the properties of different materials
2. Compare the uses of materials based on their properties
3. Explore extracting useful substance from natural resources
4. Explore the thermal conductivity of materials to improve energy efficiency
5. Explore the work of Spencer Silver and Ruth Benerito
6. Understand the mixture needed to make the perfect sandcastle

crude oil

Formed by the heating and compression of organic materials (plants, animals) over millions of years - such as algae or zooplankton.

Extracted by oil companies by drilling into the seabed and brining it up through intense pressure, and stored in containers.

Used to help make many plastic products and everyday items, meaning it is useful. However, can also be bad for environment.

Developing Experts