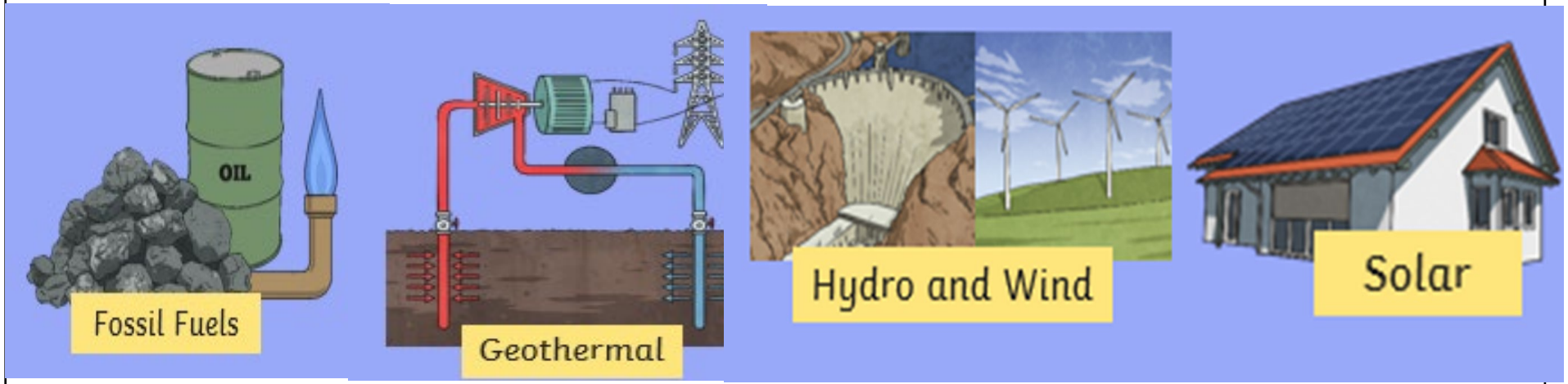
Year 4: Electricity

What should I already know?

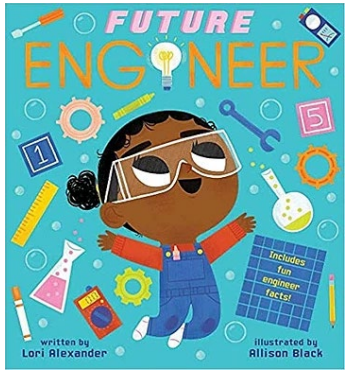
Science - Asking questions about how the world works and finding the answers.	May have some understanding that objects need electricity to work. May understand that a switch will turn something on or off.

N/C - Identify common appliances that run on electricity, Construct a simple series electrical circuit, Recognise that a switch opens and closes a circuit, Recognise some common conductors & insulators.



Significant dates, people and places

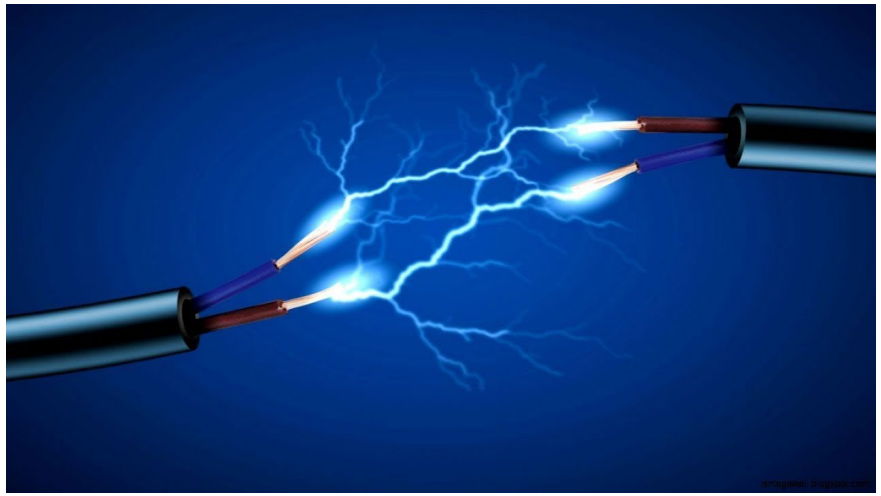
Benjamin Franklin
Benjamin Franklin conducted extensive research in electricity, selling his possessions to fund his work.
June 1752
Benjamin Franklin attached a metal key to the bottom of a dampened kite string and flown the kite in a storm-threatened sky.

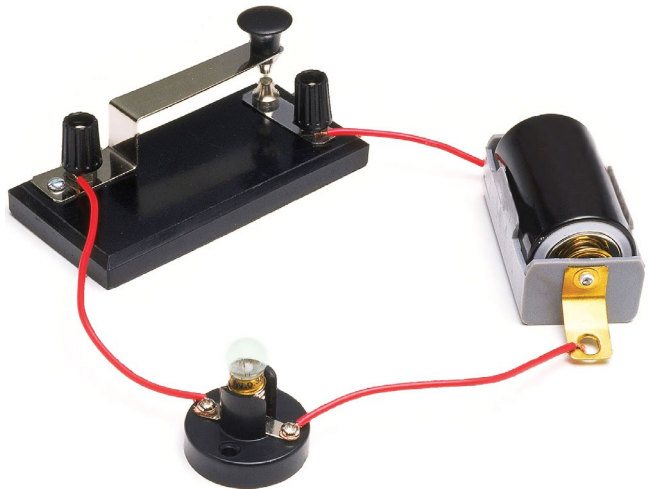


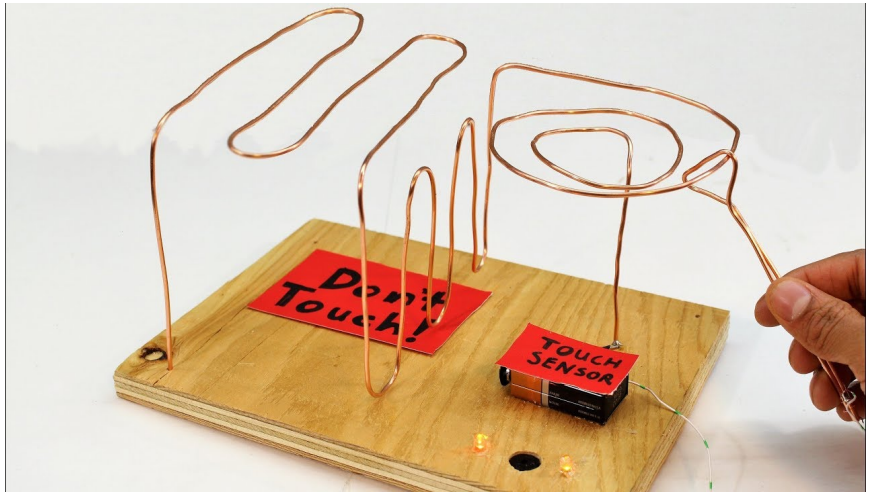
Interesting fact - **Electricians** are scientists who install and maintain electrical equipment. **Engineers** are scientists who design and build machines and buildings.

Glossary/Key Learning

Electricity	Electricity is a type of energy that can build up in one place or flow from one place to another.
Conductor	Materials that allow electricity to pass through easily.
Insulator	Materials that do not allow electricity to pass through.
How do you keep safe from electricity?	1. Don't poke anything into the holes of sockets. 2. Keep any electrical appliances away from water. 3. Don't overload sockets.
What does a basic circuit need?	A basic circuit needs 2 wires, a battery and bulb. The ends of the wires need to connect the battery and bulb.
Which materials are conductors?	Metals such as aluminium (kitchen foil), copper (a coin) and silver.
Why do we need a switch?	A switch breaks a complete circuit and can stop the flow of electricity.







Science Year 4 – Electricity

National Curriculum Objectives:

- Identify common appliances that run on electricity
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- Recognise some common conductors & insulators, and associate metals with being good conductors.

Prior Objectives:

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.

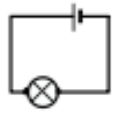
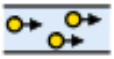
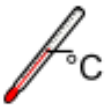
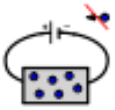
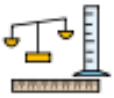
Prior Knowledge:

- May have some understanding that objects need electricity to work.
- May understand that a switch will turn something on or off.

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6
Skill – Identify Knowledge – Electricity powers many of the things we use every day.	Skill – Identify Knowledge – Never poke anything into the holes of a socket.	Skill – Label Knowledge –Current electricity is the flow of electrical charge though materials	Skill – Identify investigate Knowledge –A circuit with an electrical insulator is incomplete.	Skill – Investigate Knowledge – A switch break a complete circuit.	Skill – Give reasons Knowledge – Know what makes a complete circuit.
<u>WALT: Identify electrical appliances.</u> WILF: -Tell a partner what you know about electricity. -Identify electrical appliances -Identify non-electrical appliances. What is electricity? What is an appliance? Children come up with any questions that they have about electricity. Chn look at examples of different appliances. **Recording:** Sort the pictures into which ones use electricity and which ones don't	<u>WALT: Identify the dangers of electricity.</u> WILF: -Identify electrical appliances in the home. -Identify the dangers. -Explain how to stay safe. Discuss the different appliances children have at home. Children look at a picture with several electrical dangers and explain How is it dangerous? What can we do to stay safe? **Recording:** Chn create a poster on the dangers of electricity.	<u>WALT: Construct a circuit.</u> WILF: -Experiment safely. -Name the resources. -Create a circuit. Give children wires, bulbs, battery cells and battery holders to create a circuit. They 'play' with the equipment in attempt to create a complete circuit. What do you think this equipment is used for? How can you make the bulb work? Children learn the names of the resources. **Recording:** Draw a diagram of their circuit. Chn are not required to use symbols	<u>WALT: Recognise conductors and insulators.</u> WILF: -Identify conductors -Identify Insulators -Experiment fairly Can you remember the equipment we used? Teach chn that some materials are conductors/insulators. Chn investigate which materials are conductors by creating a circuit and using different objects to complete the circuit. **Recording:** Children record the objects that are conductors and insulators.	<u>WALT: Understand the use of a switch.</u> WILF: -Experiment safely -Create a circuit -Name the apparatus Why do we need a switch? Children use buzzers, motors and bulbs. Children look at different circuit diagrams. They predict & observe whether the switch will function when placed in different positions. They attempt to find a general rule from their findings. **Recording:** Record finding in a table.	<u>WALT: Show understanding of circuits.</u> WILF: -Experiment safely -Create a circuit -Name the apparatus In this lesson, children will be assessed on what they have learned about electricity. **Recording:** Give children diagrams of multiple circuits. They must recreate them explaining how it is complete or incomplete.

Assessment: Use the vocabulary mat to assess the children's prior knowledge and use the mats again to assess what the children have learnt.

Key Vocabulary: Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, insulator.

 circuits	 conductors	 electricity	 electrical
 battery	 bulb	 crocodile clip	 buzzer
 motor	 conduct	 conductor	 insulate
 insulator	 switch	 break	 power
 bright	brightness	 dim	 batteries
 warm	 warmth	 cold	 temperature
 thermometer	 degrees	Celsius	 insulator
 thermal	 measure	 room	