

PENTECOST TERM

SCIENCE – Year 4 - Medium Term Planning – PHYSICS: ELECTRICAL CIRCUITS AND CONDUCTORS

<u>LESSON 1</u>	<u>LESSON 2</u>	<u>LESSON 3</u>
<p>LEARNING INTENTION: To know that electricity is a type of energy that powers everyday items.</p> <p>Disciplinary knowledge:</p> <ul style="list-style-type: none"> Identify common appliances that run on electricity. <p>Aim: Develop scientific knowledge and conceptual understanding through the specific disciplines of physics.</p>	<p>LEARNING INTENTION: To know that it is important to be safe near electricity.</p> <p>Disciplinary knowledge:</p> <ul style="list-style-type: none"> Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. <p>Aim:</p> <ul style="list-style-type: none"> Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. 	<p>LEARNING INTENTION: To know that there are different electrical components.</p> <p>Disciplinary knowledge:</p> <ul style="list-style-type: none"> Identifying and naming basic parts, including cells, wires, bulbs, switches and buzzers. <p>Aim: Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.</p>
<p>Key Vocabulary: electricity, energy, battery, recycled, recharged, mains, appliances</p>	<p>Key Vocabulary: electricity, dangerous, safety</p>	<p>Key Vocabulary: component, cells, wires, lamps, motors, switches, buzzers</p>
<p>Recap & retrieval</p>	<p>Recap & retrieval</p> <ul style="list-style-type: none"> Electricity is essential to our daily lives and makes peoples' lives easier. 	<p>Recap & retrieval</p> <ul style="list-style-type: none"> Electricity is essential to our daily lives and makes peoples' lives easier. It is important to use electrical appliances safely.
<p>Key Knowledge:</p>	<p>Key Knowledge:</p>	<p>Key Knowledge:</p>

Child:

- Electricity is essential to our daily lives and makes peoples' lives easier.
- Electricity comes from two sources, mains and batteries.

Teacher:

- Batteries eventually run out of power and need to be recycled or recharged.
- Batteries power devices that can be carried around, such as mobile phones and torches.

Child:

- Mains electricity is very powerful.
- It is important to use electrical appliances safely.
- If not used carefully, it can be dangerous, causing fires, burns, electric shocks and death.

Teacher:

- Electricity can be dangerous when people overload plug sockets, touch electrical items with wet hands or touch damaged wires.

Child:

- Electrical components include cells, wires, lamps, motors, switches and buzzers
- Components have different jobs.

Teacher:

- A cell and battery provide electrical power.
- A wire connects different components and conducts electric current.
- A lamp emits light.
- A switch makes or breaks a circuit.
- A buzzer makes a sound.
- A motor creates movement.

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LESSON 4	LESSON 5	LESSON 6
<p>LEARNING INTENTION:</p> <p>To know that a circuit is a collection of components connected by wires through which an electric current can flow.</p> <p>Disciplinary knowledge:</p> <ul style="list-style-type: none"> 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. <p>Aim:</p> <p>Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.</p>	<p>LEARNING INTENTION:</p> <p>To know that a series circuit has a single path for an electric current to flow through.</p> <p>Disciplinary knowledge:</p> <ul style="list-style-type: none"> Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. <p>Aim:</p> <p>Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.</p>	<p>LEARNING INTENTION:</p> <p>To know that electrical conductors allow electricity to flow through them, whereas insulators do not.</p> <p>Disciplinary knowledge:</p> <ul style="list-style-type: none"> Recognise some common conductors and insulators, and associate metals with being good conductors. <p>Aim:</p> <p>Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.</p>
<p>Key Vocabulary:</p> <p>circuit, electric current, components, flow, complete, incomplete</p>	<p>Key Vocabulary:</p> <p>series circuit, components, path, electric current, flow</p>	<p>Key Vocabulary:</p> <p>electrical conductors, electrical insulators, results, observations, conclusion, flow</p>

<p>Recap & retrieval</p> <ul style="list-style-type: none"> • Electricity is essential to our daily lives and makes peoples' lives easier. • It is important to use electrical appliances safely. • Electrical components include cells, wires, lamps, motors, switches and buzzers. 	<p>Recap & retrieval</p> <ul style="list-style-type: none"> • Electricity is essential to our daily lives and makes peoples' lives easier. • It is important to use electrical appliances safely. • Electrical components include cells, wires, lamps, motors, switches and buzzers. • A circuit is a collection of components connected by wires through which an electric current can flow. 	<p>Recap & retrieval</p> <ul style="list-style-type: none"> • Electricity is essential to our daily lives and makes peoples' lives easier. • It is important to use electrical appliances safely. • Electrical components include cells, wires, lamps, motors, switches and buzzers. • A circuit is a collection of components connected by wires through which an electric current can flow. • A series circuit has a single path for an electric current to flow through.
<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • A circuit is a collection of components connected by wires through which an electric current can flow. • When an electric current flows through all the components of a circuit, it is called a complete circuit. • When an electric current cannot flow through all the components of a circuit, it is called an incomplete circuit. <p>Teacher:</p> <ul style="list-style-type: none"> • A circuit must be a complete loop to work. • A complete circuit has no gaps and can make a lamp light up, a buzzer sound or a motor move. • Missing wires, open switches, loose wire connections or broken components create gaps, which stop the electric current from flowing around the circuit. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • A series circuit has a single path for an electric current to flow through. • A circuit must be a complete loop to work. <p>Teacher:</p> <ul style="list-style-type: none"> • Electrical components include cells, wires, lamps, motors, switches and buzzers. • Switches open and close a circuit and provide control. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • Common electrical conductors are metals. • Common insulators include wood, glass, plastic and rubber. <p>Teacher:</p> <ul style="list-style-type: none"> • Electrical conductivity is a measure of a material's ability to allow an electric current to pass through it. • Materials that allow an electric current to pass through them are conductive. They have low resistance. • Materials that do not allow an electric current to pass through them are non-conductive. They have high resistance. • Many non-conductive materials, such as plastic, are used as electrical insulators.

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LESSON 7	LESSON 8	LESSON 9
<p>LEARNING INTENTION:</p> <p>To know that some metals are better conductors than others.</p> <p>Disciplinary knowledge:</p> <ul style="list-style-type: none">• Ask relevant questions and use different types of scientific enquiries to answer them• Set up simple practical enquiries, comparative and fair tests.• Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment. <p>Aim:</p> <p>Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.</p>	<p>LEARNING INTENTION:</p> <p>To know that a switch makes or breaks a circuit.</p> <p>Disciplinary knowledge:</p> <ul style="list-style-type: none">• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. <p>Aim:</p> <p>Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.</p>	<p>LEARNING INTENTION:</p> <p>Disciplinary knowledge:</p> <p>Aim:</p>
<p>Key Vocabulary:</p>	<p>Key Vocabulary:</p>	<p>Key Vocabulary:</p>

<p>metal, conductor, electricity, observation, variable</p>	<p>circuits, rocker switch, reed switches, commercial switches</p>	
<p>Recap & retrieval</p> <ul style="list-style-type: none"> • Electricity is essential to our daily lives and makes peoples' lives easier. • It is important to use electrical appliances safely. • Electrical components include cells, wires, lamps, motors, switches and buzzers. • A circuit is a collection of components connected by wires through which an electric current can flow. • A series circuit has a single path for an electric current to flow through. • Common electrical conductors are metals. • Common insulators include wood, glass, plastic and rubber. 	<p>Recap & retrieval</p> <ul style="list-style-type: none"> • Electricity is essential to our daily lives and makes peoples' lives easier. • It is important to use electrical appliances safely. • Electrical components include cells, wires, lamps, motors, switches and buzzers. • A circuit is a collection of components connected by wires through which an electric current can flow. • A series circuit has a single path for an electric current to flow through. • Common electrical conductors are metals. • Common insulators include wood, glass, plastic and rubber. • The metals silver, copper and gold are the three best conductors of electricity. 	<p>Recap & retrieval</p> <ul style="list-style-type: none"> • Electricity is essential to our daily lives and makes peoples' lives easier. • It is important to use electrical appliances safely. • Electrical components include cells, wires, lamps, motors, switches and buzzers. • A circuit is a collection of components connected by wires through which an electric current can flow. • A series circuit has a single path for an electric current to flow through. • Common electrical conductors are metals. • Common insulators include wood, glass, plastic and rubber. • The metals silver, copper and gold are the three best conductors of electricity. • A switch makes or breaks a circuit.
<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • The metals silver, copper and gold are the three best conductors of electricity. <p>Teacher:</p> <ul style="list-style-type: none"> • Results are information, such as data or observations, that have been found out from an investigation. • A conclusion is the answer to a question that uses the evidence collected 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> • A switch makes or breaks a circuit. <p>Teacher:</p> <ul style="list-style-type: none"> • When a switch is closed or 'on', the circuit is complete. <p>When a switch is open or 'off', the circuit is incomplete</p>	<p>Key Knowledge:</p> <p>Child:</p> <p>Teacher:</p>

<ul style="list-style-type: none">• A fair test is one in which only one variable is changed and all others remain constant.• Observations can be made regularly to identify changes over time.		
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Assessment

Cumulative quiz. Retrieval practice.