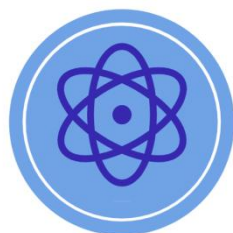
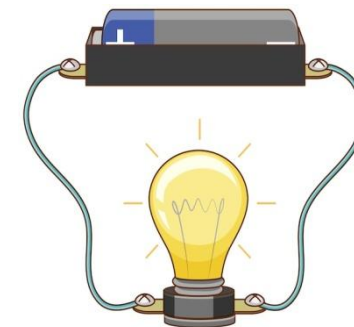


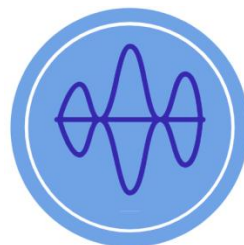


# YEAR 4 – SPRING 1

## CIRCUITS AND CONDUCTORS



INTERPRETING AND COMMUNICATING RESULTS



MAKING PREDICTIONS



SETTING UP TESTS



OBSERVING AND MEASURING



EVALUATING



ANALYSING AND RECORDING DATA

QUESTION: HOW IS ELECTRICITY USED TO POWER OUR HOMES AND DEVICES?

(SCIENTIST: NIKOLA TESLA)

| WEEKS OF TEACHING | LINE OF ENQUIRY          | THRESHOLD CONCEPT                                                                                             | SUBSTANTIVE KNOWLEDGE                                                                                                                                                                                                | DISCIPLINARY KNOWLEDGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | CURRICULUM ENDPOINT                                                                                                                                |
|-------------------|--------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Making a simple circuit. | <ul style="list-style-type: none"> <li>Work scientifically</li> <li>Understand electrical circuits</li> </ul> | <ul style="list-style-type: none"> <li>Electricity is vitally important in today's society. Many things need electricity to function.</li> <li>An electrical circuit needs to be wired correctly in order</li> </ul> | <ul style="list-style-type: none"> <li>Ask relevant questions.</li> <li>Set up simple, practical enquiries and comparative and fair tests.</li> <li>Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.</li> <li>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>Identify whether or not a lamp will light in a simple</li> </ul> | <ul style="list-style-type: none"> <li>identify common appliances that run on electricity</li> <li>construct a simple series electrical</li> </ul> |

|   |                             |                                                                                                               |                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                              |
|---|-----------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                             |                                                                                                               | to function.                                                                                                                                                                   | series circuit, based on whether or not the lamp is part of a complete loop with a battery.                                                                                                                                                                                                                                                                                                                                                                                                                                                               | circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. <ul style="list-style-type: none"> <li>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</li> <li>recognise that a switch opens and closes a circuit and associate this with</li> </ul> |
| 2 | How is electricity made?    |                                                                                                               | <ul style="list-style-type: none"> <li>Mains electricity is generated in many different ways.</li> </ul>                                                                       | <ul style="list-style-type: none"> <li>Ask relevant questions.</li> <li>Gather, record, classify and present data in a variety of ways to help in answering questions.</li> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>Identify common appliances that run on electricity.</li> </ul>                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                              |
| 3 | Batteries and bulbs.        | <ul style="list-style-type: none"> <li>Work scientifically</li> <li>Understand electrical circuits</li> </ul> | <ul style="list-style-type: none"> <li>Power is shared between the components of a circuit.</li> <li>Too much power running through a circuit can cause it to fail.</li> </ul> | <ul style="list-style-type: none"> <li>Set up simple, practical enquiries and comparative and fair tests.</li> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</li> <li>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                              |
| 4 | The dangers of electricity. | <ul style="list-style-type: none"> <li>Work scientifically</li> <li>Understand electrical circuits</li> </ul> | <ul style="list-style-type: none"> <li>Mains electricity is potentially dangerous.</li> </ul>                                                                                  | <ul style="list-style-type: none"> <li>Ask relevant questions.</li> <li>Gather, record, classify and present data in a variety of ways to help in answering questions.</li> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>Use straightforward, scientific evidence to answer questions or to support their findings.</li> <li>Identify common appliances that run on electricity.</li> </ul>                                                             |                                                                                                                                                                                                                                                                                                                                                                                              |

|                                                                                                                                                                                              |                         |                                                                                                                   |                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 5                                                                                                                                                                                            | Conductor or insulator? | <ul style="list-style-type: none"> <li>• Work scientifically</li> <li>• Understand electrical circuits</li> </ul> | <ul style="list-style-type: none"> <li>• An electrical conductor is a material that allows electricity to pass through it. An electrical insulator prevents this.</li> </ul> | <ul style="list-style-type: none"> <li>• Ask relevant questions.</li> <li>• Set up simple, practical enquiries and comparative and fair tests.</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.</li> <li>• Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</li> <li>• Use straightforward, scientific evidence to answer questions or to support their findings.</li> <li>• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>• Recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul> | whether or not a lamp lights in a simple series circuit |
| 6                                                                                                                                                                                            | Making a switch.        | <ul style="list-style-type: none"> <li>• Work scientifically</li> <li>• Understand electrical circuits</li> </ul> | <ul style="list-style-type: none"> <li>• A switch is a way to control the flow of electricity through a circuit by breaking or completing it.</li> </ul>                     | <ul style="list-style-type: none"> <li>• Ask relevant questions.</li> <li>• Set up simple, practical enquiries and comparative and fair tests.</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</li> </ul>                                                                |                                                         |
| <p style="text-align: center;">Assessment opportunity:</p> <p style="text-align: center;">Given access to a variety of components, create a working circuit which incorporates a switch.</p> |                         |                                                                                                                   |                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                         |