Ravens Wood School
KS3 Curriculum Plan

Subject: Year 8 Electricity

Overarching Topic: Electricity			
Why is this topic being studied at this time? How does it fit into the wider subject curriculum?	• Imagine a world with no electricity. No mobile phones, no tablets, no TV, no refrigeration, limited medical procedures. It is integral to the modern world. • This unit applies the concept of energy to electrical circuits. In particular, pupils learn that while current is not used up in the circuit, energy is. This work focuses on distinguishing between two abstract concepts: electricity as 'flowing stuff' and electrical energy as something that is identified by input and output effects. Its effects are associated with the brightness of bulbs and its origins in the voltage rating of batteries. There are necessary simplifications in the treatment, as appropriate to this early unit. This unit uses ideas developed in the key stage 2 programme of study. It builds on ideas introduced in unit 6G 'Changing circuits' and unit 4F 'Circuits and conductors' in the key stage 2 scheme of work.		
	Critical	**Core**	**Pinnacle**
The Big Questions (What questions will students be able to answer upon mastery of the topic?)	What is voltage? What is current? What is resistance? Can I use the equation V=I R? What is a circuit? What is the difference between a series and parallel circuit? What happens to voltage in a series circuit? Can you describe how you can use an example of water to represent current flow?	Can you draw a circuit diagram to show how voltage can be measured in a simple circuit? Can you explain using the idea of energy to explain how voltage and resistance affect the way components work? Given a graph of voltage against current, can you use the gradient to determine the resistance of a component? Can you describe using an analogy like water in pipes to explain why part of a circuit has higher resistance? Can you describe how current changes in series and parallel circuits when components are changed? Can you turn circuit diagrams into real series and parallel circuits, and vice versa? Can you describe what happens when charged objects are placed near to each other or touching? Can you use a sketch to describe how an object charged positively or negatively became charged up?	Can you describe a model that can represent voltage as an electrical push from the battery, or the amount of energy per unit of charge transferred through the electrical pathway? How in a series circuit, is voltage shared between each component when in a parallel circuit, voltage is the same across each loop? Can you describe how components with resistance reduce the current flowing and shift energy to the surroundings? Can you compare the advantages of series and parallel circuits for particular uses? Can you evaluate a model of current as electrons moving from the negative to the positive terminal of a battery through the circuit? Can you suggest ways to reduce the risk of getting electrostatic shocks?
The Key Skills/ Techniques	**The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle knowledge.**		
	Skill/Technique	**How will this skill be developed?**	
	1. Graphing & Drawing	Draw graphs with suitable scales, axes and units. Correct line of best fit. Appreciation of anomalies and processed data. Scientific drawing of cells, concepts and scientific equipment.	
	2. Variables	Identify independent, dependent and control variables and devise experiments to include these to ensure valid results. Appreciation of uncertainty.	
	3. Data Analysis	Describe, explain and predict trends. Graph and table data interpretation. Identify links and patters within and between topics. Statistical analysis of data to include mode/median/mean/range determination. Drawing justified conclusions from presented data.	
	4. Application	Apply known and taught theory in unfamiliar contexts. Making links to taught theory and extracting key ideas. Communicating using correct scientific terminology.	
	5. Working Scientifically	Identify hazards and planning to limit risk. Describe how to improve accuracy/precision/repeatability/reproducibility/validity. Evaluate reliability of methods and investigations, taking in to account data analysis.	