KS3 Unit Overview – Big Picture

Subject/Year group/Unit Title	Big picture questions	Pupils will focus particularly on the following statements from the programme of study:
Physics **Year 9** **Electricity & Magnetism** **1.** Introduction to magnets **2.** Magnetic fields **3.** Electromagnets **4.** Electromagnets practical **5.** Magnetism test **6.** Static electricity **7.** Circuit components **8.** Conductors and insulators **9.** Fruity batteries **10.** Series circuits **11.** Parallel circuits **12.** Resistance **13.** Electrical safety **14.** Badger assessment **15.** Electricity test	What is magnetism? How can magnetism be useful? How can we make electricity? How does electricity flow in simple series and parallel circuits? How can we use electricity safely?	• non-contact forces: gravity forces acting at a distance on Earth and in space, forces between magnets, and forces due to static electricity **Current electricity** • electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge • potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current • differences in resistance between conducting and insulating components (quantitative) **Static electricity** • separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects

		• the idea of electric field, forces acting across the space between objects not in contact **Magnetism** • magnetic poles, attraction and repulsion • magnetic fields by plotting with compass, representation by field lines • Earth's magnetism, compass and navigation • the magnetic effect of a current, electromagnets, DC motors (principles only)
Assessment tasks	**As FCJ educators, we will focus on the FCJ values by:**	**We will ensure students skills in reading, writing, communication and mathematics are enhanced by:**
Badger assessment Magnetism test Electricity test Essential homework x 2 Essential practicals	Excellence – set highest possible standards for all learners Companionship – teamwork when completing practical investigations, respect during class discussions Dignity – class discussions and Q&A, ensuring everyone is listened to and their views heard Justice - Hope – highlight progress in science and innovation to inspire learners Gentleness – classroom management in a firm but fair and gentle manner	R- from board, textbooks, within lessons W- written classwork, planning practical work C – discussions within lessons M – calculation of resistance, graphs, recording results, using equipment

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We are supporting progression from KS2 in this unit by:	**We are supporting progression to KS4 in this unit by:**	**Misconceptions and how they will be addressed**
Learners know from KS2 about some magnetic materials and how poles interact. They have met some circuit components and understand how switches work and how series circuits can be made brighter/dimmer by changing bulbs and voltage.	Learners will study electromagnetism in more detail at KS4 to include Fleming's left-hand rule, the motor effect, solenoids and induced magnetism. Students will link resistance to ohm's law and component characteristics at KS4. They will study series and parallel circuits in more detail – looking at how current, pd and resistance vary in each.	Difference between current and potential difference will be addressed during class discussion, analogies and models and video clips.