Key Stage 3 Subject Curriculum Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Topics and content to be learnt		**Topics and content to be learnt**		**Topics and content to be learnt**	
Y7	**Introduction** to KS3 Science & Investigations **B1.1 Cells**: plant and animal cells , unicellular organisms, observing cells, osmosis	**C1.1 Particles and their behaviour**: states of matter, particle model, melting freezing and boiling, diffusion and gas pressure **P1.1 Forces**: squashing and stretching, springs , elasticity, drag forces, forces balanced and unbalanced, contact/ non-contact forces	**B1.2 Structure and function of body systems**: organisations, gas exchange, breathing , skeleton, movement **C1.2 Elements, Atoms and Compounds**: chemical formulae	**P1.2 Sound**: waves and energy transfer, loudness and pitch, ultrasound **B1.3 Reproduction**: adolescence, fertilisation, development of the foetus, menstrual cycle, flower sand pollination, fertilisation and germination seed dispersal	**C 1.3 Reactions**: chemical, word equations, burning fuels, thermal decomposition, conservation of mass, exothermic and endothermic reactions- introduction to global warming theories/predictions **P1.3 Light**: reflection, refraction, colour, the human eye and camera	**C1.4 Acids and Alkalis**: indicators and pH, neutralisation, making salts **P1.4 Space**: development of the universe and theories, the solar system , earth, moon **Project work**
	Knowledge, skills and understanding explicit to these topics/stage Laboratory work, health and Safety, application of all topics to real life situations to make science more experiential. It is important at this we build student confidence in science, their ability to express their own scientific thoughts Links to maths:-it is key at this stage to introduce maths in to science Deal with averages mode mean median Links to English-being able to understand facts tie these into concepts learn key words and express these concepts in a written format-continuous throughout the students study in science Links to Art: Expression of diagrammatic formats to answer questions.		***Knowledge, skills and understanding explicit to these topics/stage*** **Each subtopic is divided into a skill base:-** **Solve** **Communicate** **Enquire** **Analyse** **please see examples herein** Links to Maths : Introduction of equations triangles and making them a regular feature of the classroom environment-problem solving using simple algebraic techniques Students have not yet worked much on algebra from KS2. Summer 1 sets the tone to understand what algebra is, how it works and why it is used.		***Knowledge, skills and understanding explicit to these topics/stage*** Links to Maths Students numeracy skills extend to work with percentage, ratio and proportion questions – very heavily based on problem solving questions By the end of this unit, students need to be able to take data given and interpret the information in a form of different graphs. Ties in with Maths teaching of these concepts which will be in the spring term. Project work will have a link to STEM.	

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Y8	**Review** : Key maths skills required for science (collaboration with maths) – percentages, averages and graph work **B2.1 Health and Lifestyle**: nutrients, food tests, digestive system, unhealthy diets drugs, alcohol, smoking	**C2.1 Periodic table**: metals and non metals, groups and periods , Group 1 and 7 elements, transition metals **P2.1 Electricity and Magnetism**: circuits, potential difference, series and parallel circuits, resistance, magnetic fields	**B2.2 Ecosystem processes**: photosynthesis, plant minerals, aerobic and anaerobic respiration, food chains and webs, ecosystems **C2.1 Separating techniques**: mixtures, solutions solubility, filtration, evaporation and distillation	**P2.2 Energy**: food and fuels, energy resources, work and power, machines, energy transfer convection, conduction, radiation, links to temperature **B2.3 Adaptation and Inheritance**: competition, variation, natural selection and extinction	**C2.3 Metals and Acids**: reactions with water, oxygen, extracting metals displacement reactions **P2.3 Motion and Pressure**: speed velocity, time motion graphs, pressure in gases solids and liquids- link back to particle theory	**C2.4 The Earth**: atmosphere, carbon cycle, climate change, recycling, rocks **Project work**
	Knowledge, skills and understanding explicit to these topics/stage Links to maths: augmented graph skills and the interpretation of data appropriate to the context : scatter graphs correlation, averages percentage and ratio Links to English-being able to understand facts tie these into concepts learn key words and express these concepts in a written format-continuous throughout the students study in science Links to Art: Expression of diagrammatic formats to answer questions		***Knowledge, skills and understanding explicit to these topics/stage*** At this point, students are building on their knowledge from year 8 spring term, and extending their knowledge further through application of the topics, and stretch and challenge.		***Knowledge, skills and understanding explicit to these topics/stage*** Students are reinforcing key scientific techniques however have an excellent knowledge base to build from.	

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Y9	**B1 Cell structure and transport**: microscopes. animal and plant cells, eukaryotic/prokaryotic cells, specialisation, diffusion, osmosis and active transport **C1 Atomic structure**: atoms, chemical equations, separating mixtures, factional distillation, chromatography, history of the atom, ions atoms and isotopes, electronic structure	**P1 Conservation and dissipation of energy**: energy stores, work and energy, GPE, KE, power , efficiency, appliances, dissipation **B2 Cell division**: growth and differentiation, stem cells, and ethics	**C2 The periodic table**: development, group 1 and group 7, trends, *transition metals* **P2 Energy transfer by heating**: conduction, convection, infrared radiation, specific heat capacity, applications to building materials/houses	**B3 Organisation and the digestive system**: tissues and organs, digestive system, food chemistry, catalysts and enzymes, efficient digestion **C3 Structure and bonding**: states of matter, atoms become ions, ionic bonding, covalent boding, giant ionic and covalent structures, fullerenes, graphene, boding in metals, giant metallic structures, *nanoparticles and applications*	**P3 Energy resources**: demands, wind, water, power from the sun and earth, the environment, energy issues **B4 Organising animals and plants**: blood, vessels, heart, breathing and gas exchange, tissues and organs in plants, transport systems in plants, evaporation and transpiration	**C4 Chemical calculations**: relative masses and moles, *chemical yield, atom economy,* expressing concentrations, *titrations, titrations calculations, volumes of gases* **P4 Electric circuits**: current, charge, potential difference, resistance, series and parallel circuits, components
	Knowledge, skills and understanding explicit to these topics/stage Students are now extending their KS3 content and looking at core GCSE materials reinforcing Year 7 and 8 knowledge and scientific skills and techniques. Links to English-being able to understand facts tie these into concepts learn key words and express these concepts in a written format.		***Knowledge, skills and understanding explicit to these topics/stage*** At this point, students are acquiring, selecting and applying scientific techniques to solve problems. They are showing more reasoning skills, and making deductions from data and other information provided.		***Knowledge, skills and understanding explicit to these topics/stage*** Students are answering extended written questions augmenting and honing their written language skills for the 6 marker question.	

	Action Plan KS3 Subject specialists teaching each KS3 class • KS3 Science Club • KS3 only Trips: in the Calendar :The Big Bang' and 'Science Museum' • Targeted feedback sheets for Yr 7 and Yr 8 for all topics, Yr 9s will be completed before the commencement of the next academic year • Yr 9s are taught core Separate science (development opportunities for all students at this stage to progress to all tiers) • Shared SOW with all stakeholders teachers students and parents-from September 2019 • Every topic has linked assessments and RAW data marks entered into a new and fit for purpose data entry sheet		