

Curriculum planning map for Science at Nunthorpe Academy.

Overview explanation of why do students study your subject. The study of **science** develops...

The curriculum for Science at Nunthorpe Academy aims to ensure that all pupils:	How?
Our philosophy for the science curriculum is to enable science to have a meaning to all students, for them to understand the importance of science in the wider world and for science to be accessible to all	The 'big ideas' and scientific skills have been planned and mapped across the curriculum to ensure that students cover the key concepts and ideas they need to understand the importance of science – this planning can be seen in the document below
The curriculum is built around understanding the 'big ideas' in science and how these underpin all of science across the different disciplines. These 'big ideas' are: Atoms – fundamental building of matter in the universe Energy – fundamental system of determining whether interactions between objects can occur and what the outcome will be Forces – fundamental understanding of the forces that control all interactions between matter and energy Cells – fundamental building block of life Interdependence – fundamental understanding of how all life on Earth is connected These 'big ideas' are introduced at KS3 and build on the ideas that students learned across the previous key stages. Throughout KS3 and KS4 these 'big ideas' are re-visited and developed allowing the students to understand more and more complex ideas and theories. This will allow students to understand the fundamental laws at operation within the Universe and how we as humans have ended up where we are.	All of the topics that are taught across the science curriculum at each key stage build on one of the 'big ideas' in science. This is shown in the intent box within each period of time in the curriculum plan. The 'big ideas' have been mapped across the curriculum to ensure that they are revisited many times and are continually developed with an increasing complexity – this can be seen in the planning document below Regular knowledge retrieval and application of understanding across familiar and unfamiliar contexts allow these key ideas to become embedded.
In combination with understanding the 'big ideas' across science, scientific skills are introduced and developed. These skills allow students to think in a critical way about the world and to use an evidence based approach when making decisions. These skills are transferable across many disciplines of life. In our curriculum these skills are broken down into four categories: Thinking scientifically – critical thinking skills to make evidence based decisions Experimental skills – skills necessary to investigate propositions and ideas made by people Analysis and evaluation skills – skills necessary to make conclusions based on evidence and critically evaluate the robustness, accuracy and validity of evidence Using technical vocabulary, quantities and units – communicating complex ideas in a technical and meaningful way. These skills will allow students to make critically important decisions in their future lives	Skills are planned and mapped across the curriculum to ensure that students regularly get the opportunity to practice and build upon their use –this can be seen in the planning document below. The continual re-visiting of these skills in each topic across the key stages will embed these skills.

In Science lessons at Nunthorpe Academy pupils will be taught to:	How?
The content and understanding of the 'big ideas' of science are taught in a number of smaller interconnected topics	Every topic is underpinned by a scientific 'big idea'
Within each of these topics a 'big idea' of science is visited and the understanding of how these underpin the many concepts and ideas taught.	Every topic is shared with students in a way that highlights the 'big idea'. The key learning objectives are shared with students at the beginning and end of every topic and specific ones shared within each lesson
Knowledge, concepts and ideas are shared in an informative and engaging manner by a professional confident in their subject knowledge	Planning of lessons ensure that lessons are engaging and strategies are used to allow students to demonstrate their understanding
The scientific skills are taught across the topics with certain topics focusing on certain skills due to the context of the subject knowledge	Opportunities for skills use is planned into every topic and regular experimental work allows students to practice and develop experimental, analysis and evaluation skills.
The experimental skills and the analysis and evaluation skills are regularly visited by the completion of key required practicals across the key stages and by the many smaller experiments undertaken throughout lessons	

CEIAG, including Gatsby benchmark, further and higher education opportunities in subject.
These will be agreed at SLT as a whole academy and inserted here!

Academy focused transferable skills taught in subject.
These will be agreed at SLT as a whole academy and inserted here!

Academy 'aspects of Good Learning/non negotiables' will be evident in every lesson in subject.
All lessons will identify 'objectives or big questions' that are linked to the curriculum planning document. All lessons will begin with a knowledge and/or skills retrieval task. Differentiation will be evident, linked to students needs and will 'enable' progress. Targeted high quality/challenging questioning will be evident in every lesson. All lessons will end with a plenary that enables students to demonstrate what they have learnt.

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
	Topic title	Enquiry Process Forces Electromagnets	Energy Waves	Matter	Reactions Earth	Organisms Ecosystems	Genes
	Building on KS2 (Skills and content)	At KS2 students should have studied “Working Scientifically”, “Living Things and Their Habitats”, “Animals Including Humans”, “Properties and Change of Materials”, “Earth and Space”, “Forces”. It is the intention to build on the knowledge and skills developed during these studies, at the same time as introducing new knowledge and skills while working through the 10 themes of our KS3 curriculum.					
	Intent	The 5 “Big Ideas” of GCSE Science (Cells, Interdependence, Atoms, Energy, Forces) have been broken down into the 10 themes of our KS3 Science curriculum to allow different aspects of them to be thoroughly explored and the identities of the three separate sciences to emerge. Scientific enquiry skills that have been introduced across key stage 2 3 are now built upon and focused into the Enquiry Process Skills, EP2.1-2.16 (see below).					
Y7	Knowledge Skills Understanding	Knowledge and Understanding Enquiry Process Investigations, variable and data Forces Balanced and Unbalanced Speed Distance Time Graphs Gravity Electromagnets Potential difference Resistance Series and Parallel Current Charge Skills Enquiry process EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.9 Collect data EP2.10 Devise Questions EP2.11 Plan variables EP2.12 Test Hypotheses EP2.13 Estimate Risks Forces EP2.1 Analysing Patterns EP2.4 Present Data EP2.9 Collect data EP2.11 Plan variables EP2.12 Test Hypotheses EP2.13 Estimate Risks Electromagnets EP2.1 Analysing Patterns EP2.3 Draw Conclusions EP2.9 Collect data EP2.10 Devise Questions EP2.12 Test Hypotheses EP2.13 Estimate Risks	Knowledge and Understanding Energy Fuels Resources Power Dissipation Waves Sound- Speed, pitch, amplitude, hearing Light- Reflection, refraction, vision, colour Skills Energy EP2.1 Analysing Patterns EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.7 Critique Claims EP2.8 Justify Opinions EP2.9 Collect data EP2.12 Test Hypotheses EP2.14 Examine Consequences Waves EP2.2 Discuss limitations EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.12 Test Hypotheses EP2.13 Estimate Risks	Knowledge and Understanding Matter Particle model States Diffusion Pressure Pure substances/mixtures Solutions Filtration Evaporation/distillation Chromatography Skills Matter EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.9 Collect data EP2.10 Devise Questions EP2.11 Plan variables	Knowledge and Understanding Reactions Chemical reactions Acids and Alkalis pH Indicators Acid strength Neutralisation Salts Elements Metals/non metals Rxns of metals Earth Structure Sedimentary rocks Igneous /metamorphic Rock cycle Ceramics Night sky Solar system Earth Moon Skills Reactions EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.9 Collect data EP2.10 Devise Questions EP2.11 Plan variables EP2.12 Test Hypotheses EP2.13 Estimate Risks Earth EP2.1 Analysing Patterns EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.10 Devise Questions EP2.12 Test Hypotheses EP2.13 Estimate Risks EP2.15 Review Theories	Knowledge and Understanding Organisms Levels of organisation Skeleton and movement Cells Movement of substances Unicellular organisms Ecosystems Food chains and webs Disruption Ecosystems Competition Plant reproduction Skills Organisms EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.9 Collect data EP2.12 Test Hypotheses EP2.13 Estimate Risks Ecosystems EP2.1 Analysing Patterns EP2.3 Draw Conclusions EP2.4 Present Data EP2.9 Collect data EP2.10 Devise Questions EP2.11 Plan variables	Knowledge and Understanding Genes Variation Continuous and discontinuous Adaptation Human reproduction Skills Genes EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.12 Test Hypotheses

	Knowledge and skills revisited	Knowledge Starters Covering work from Enquiry process, Forces Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 5,10 Yr 5 & 6 Sections 5,10,11 KS3 Sections 3.2.1, 3.2.2, 3.4.1, 3.4.2, 3.4.3, 3.4.4 Written Revision HW	Knowledge Starter Covering work from EP, Forces and Electromagnets Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 4,9 Yr 5 & 6 Sections 6,9 KS3 Sections 3.1.1, 3.1.5, 3.1.6 Written Revision HW	Knowledge Starter Covering work from EP, Forces, Electromagnets, Waves, Energy Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 8 Yr 5 & 6 Sections 3 KS3 Sections 2.3.1, 2.3.2, 3.5.2, 3.5.3 Written Revision HW	Knowledge Starter Covering work from EP, Forces, Electromagnets, Waves, Energy, Matter Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 3 Yr 5 & 6 Sections 4 KS3 Sections 2.2.1, 2.2.2, 2.2.3, 2.4.2, 2.8.4, 3.6.1 Written Revision HW	Knowledge Starter Covering work from EP, Forces, Electromagnets, Waves, Energy, Matter, Reactions, Earth Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 1, 2, 7 Yr 5 & 6 Sections 1, 2, 6, 7 KS3 Sections 1.1.1, 1.1.3, 1.1.6 Written Revision HW	Knowledge Starter Covering work from EP, Forces, Electromagnets, Waves, Energy, Matter, Reactions, Earth, Organisms, Ecosystems Seneca covering KS2 science as well as previous and current topics Yr 5 & 6 Sections 8 KS3 Sections 1.1.7, 1.1.8 Written Revision HW
		Skills:	Skills: EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.8 Justify Opinions EP2.9 Collect data EP2.12 Test Hypotheses EP2.13 Estimate Risks	Skills: EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.9 Collect data EP2.10 Devise Questions EP2.11 Plan variables	Skills: EP2.1 Analysing Patterns EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.9 Collect data EP2.10 Devise Questions EP2.11 Plan variables EP2.12 Test Hypotheses EP2.13 Estimate Risks EP15 Review Theories	Skills: EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.9 Collect data EP2.10 Devise Questions EP2.11 Plan variables EP2.12 Test Hypotheses EP2.13 Estimate Risks	Skills: EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.12 Test Hypotheses
	Assessment (for learning)	End of unit assessment: Topic Test Forces and Electromagnets LAQ Enquiry process LAQ Forces RP Forces RP Electromagnets	End of unit assessment: Topic Test Energy and Waves LAQ Energy LAQ Waves Pract Waves	End of unit assessment: Topic Test Matter LAQ Matter RP Matter RP Matter	End of unit assessment: Topic Test Reactions Topic Test Earth LAQ Reactions LAQ Earth RP Reactions RP Reactions Pract Earth	End of unit assessment: Topic Test Organisms Topic Test Ecosystems Year 7 Big Test LAQ Organisms LAQ Ecosystems RP Organisms Pract Ecosystems	End of unit assessment: Topic Test Genes LAQ genes
		Cumulative assessment: Starters Covering work from Enquiry process, Forces Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 5,10 Yr 5 & 6 Sections 5,10,11 KS3 Sections 3.2.1, 3.2.2, 3.4.1, 3.4.2, 3.4.3, 3.4.4 Written Revision HW	Cumulative assessment: Starter Covering work from EP, Forces and Electromagnets Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 4,9 Yr 5 & 6 Sections 6,9 KS3 Sections 3.1.1, 3.1.5, 3.1.6 Written Revision HW	Cumulative assessment: Starter Covering work from EP, Forces, Electromagnets, Waves, Energy Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 8 Yr 5 & 6 Sections 3 KS3 Sections 2.3.1, 2.3.2, 3.5.2, 3.5.3 Written Revision HW	Cumulative assessment: Starter Covering work from EP, Forces, Electromagnets, Waves, Energy, Matter Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 3 Yr 5 & 6 Sections 4 KS3 Sections 2.2.1, 2.2.2, 2.2.3, 2.4.2, 2.8.4, 3.6.1 Written Revision HW	Cumulative assessment: Starter Covering work from EP, Forces, Electromagnets, Waves, Energy, Matter, Reactions, Earth Seneca covering KS2 science as well as previous and current topics Yr 3 & 4 Sections 1, 2, 7 Yr 5 & 6 Sections 1, 2, 6, 7 KS3 Sections 1.1.1, 1.1.3, 1.1.6 Written Revision HW	Cumulative assessment: Starter Covering work from EP, Forces, Electromagnets, Waves, Energy, Matter, Reactions, Earth, Organisms, Ecosystems Seneca covering KS2 science as well as previous and current topics Yr 5 & 6 Sections 8 KS3 Sections 1.1.7, 1.1.8 Written Revision HW
	Literacy focus	Command words: LAQ Forces Draw Decide Identify Suggest Explain Give LAQ Electromagnets Draw Identify Explain	Command words: LAQ Energy Identify Explain Suggest LAQ Waves Compare Explain Discuss	Command words: LAQ Matter Describe Draw	Command words: LAQ Earth Describe Say Explain	Command words: LAQ Organisms Name Describe Draw Link Explain LAQ Ecosystems Describe Draw	Command words: LAQ Genes State Describe Explain
		Other literacy foci: Glossaries used for development of vocabulary	Other literacy foci: Glossaries used for development of vocabulary	Other literacy foci: Glossaries used for development of vocabulary	Other literacy foci: Glossaries used for development of vocabulary	Other literacy foci: Glossaries used for development of vocabulary	Other literacy foci: Glossaries used for development of vocabulary

		LAQ in Forces and Electromagnets	LAQ in Energy and waves	LAQ in Matter	LAQ in Earth	LAQ in Organisms and Ecosystems	LAQ in Genes
	Numeracy focus	Enquiry Process Taking measurement Units 1a decimals 2b calculating means 2c/g presenting data Forces Taking measurements Units 1a decimals 2c/g presenting data 3c substituting into equations 4c plotting graphs Electromagnets Taking measurements Units 1a decimals 2c/g presenting data 3c substituting into equations	Energy Units Ranking Taking measurements Converting units Using tables 3c substituting into eqns 3a mathematical symbols Waves Units Taking measurements 3c substituting into eqns 3h orders of magnitude 4a graphs 5a angles 5b 2D representations	Matter Units Taking measurements Drawing tables Predict/estimate 4a graphs 4c plot graphs 5b 2D and 3D modelling	Reactions Drawing tables Earth Deep time Units Taking measurements Converting units Scale 2h Orders of magnitude 5b 3D modelling	Organisms Units 2h Orders of magnitude 5b 2D representations Ecosystems Ordering Accuracy Precision Drawing tables Scales Units 2b means 2f mean 4c plot graphs	Genes Types of variable Types of graph
	SMSC / British Values	Social Understanding how scientists collect data. Spiritual Developing awareness of how forces and electricity work.	Spiritual Developing understanding of what energy is and where waves fit into everyday experiences.	Spiritual Developing understanding of the nature of the matter that makes up all things.	Spiritual Developing understanding of chemical reactions Developing understanding of the structure of Earth, of deep time and the solar system.	Spiritual Developing understanding of what all living things are made of. Developing understanding of the interlinked nature of all the systems on Earth.	Spiritual Developing understanding of how inheritance occurs. Develop understanding of human reproduction. Moral Develop understanding of human reproduction. Social Develop understanding of human reproduction.
	Safeguarding	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Electromagnets -using electricity	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Energy – handling hot equipment	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Matter -Using glass equipment safely	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Reactions - using hazardous chemical safely	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Organisms - using delicate equipment safely	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Genes - develop early understanding of sexual and reproductive health

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y8	Topic title	Enquiry Process Forces Electromagnets	Energy Waves	Matter	Reactions Earth	Organisms Ecosystems	Genes
	Building on Year 7 (Skills and content)	Each of the topics taught in year 7 is developed further in year 8. The Enquiry Process skills introduced in Yea7 7 are also built upon in preparation for GCSE.					
	Intent	The 5 “Big Ideas” of GCSE Science (Cells, Interdependence, Atoms, Energy, Forces) have been broken down into the 10 themes of our KS3 Science curriculum to allow different aspects of them to be thoroughly explored and the identities of the three separate sciences to emerge. Scientific enquiry skills that have been introduced across key stage 2 3 are now built upon and focused into the Enquiry Process Skills, EP2.1-2.16 (see below). The themes have been introduced in Yr 7 and are now further developed in preparation for GCSE.					
	Knowledge Skills Understanding	Knowledge and Understanding Enquiry Process Planning Analysis and Evaluation Communication Evidence and sources Critiquing claims and opinions Risks and benefits Reviewing theories Forces Friction and drag Squashing and stretching Turning forces Pressure in gases and liquids Stress Electromagnets Non-contact forces Magnets and magnetic fields Electromagnets Skills Enquiry process EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.7 Critique Claims EP2.8 Justify Opinions EP2.9 Collect data EP2.10 Devise Questions EP2.11 Plan variables EP2.12 Test Hypotheses EP2.14 Examine Consequences EP2.15 Review Theories EP2.16 Interrogate Sources Forces EP2.1 Analysing Patterns EP2.3 Draw Conclusions EP2.4 Present Data EP2.9 Collect data EP2.11 Plan variables EP2.12 Test Hypotheses Electromagnets EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.12 Test Hypotheses	Knowledge and Understanding Energy Work Temperature Energy transfer Waves Sound and water waves Energy Radiation Modelling waves Skills Energy EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.13 Estimate Risks Waves EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations	Knowledge and Understanding Matter Elements Atoms Compounds Formulae Polymers Periodic table Skills Matter EP2.1 Analysing Patterns EP2.3 Draw Conclusions EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.12 Test Hypotheses EP2.13 Estimate Risks	Knowledge and Understanding Reactions Atoms in reactions Thermal decomposition Conservation of mass Exo and endothermic Energy level diagrams Bond energies Earth Global warming Carbon cycle Climate change Extracting metals Recycling Skills Reactions EP2.1 Analysing Patterns EP2.3 Draw Conclusions EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.12 Test Hypotheses EP2.13 Estimate Risks Earth EP2.1 Analysing Patterns EP2.4 Present Data EP2.5 Communicate Ideas EP2.13 Estimate Risks	Knowledge and Understanding Organisms Gas exchange Breathing Drugs Alcohol Smoking Nutrients Food and digestion Digestive system Ecosystems Aerobic and anaerobic respiration Biotechnology Photosynthesis Plant minerals Skills Organisms EP2.1 Analysing Patterns EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.9 Collect data EP2.13 Estimate Risks Ecosystems EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.4 Present Data EP2.6 Construct Explanations EP2.9 Collect data EP2.10 Devise Questions EP2.12 Test Hypotheses EP2.13 Estimate Risks	Knowledge and Understanding Genes Natural selection Darwin Extinction Biodiversity Inheritance DNA Genetics Genetic modification Skills Genes EP2.5 Communicate Ideas EP2.14 Examine Consequences EP2.15 Review Theories
	Knowledge and skills revisited	Knowledge: Starter Covering Yr7&8 Enquiry Process, Yr7&8 Forces Seneca	Knowledge: Starter Covering work from Yr7&8 Electromagnets, Yr7&8 Forces, Yr7&8 Enquiry Process	Knowledge: Starter Covering work from Yr7&8 Forces, Yr7&8 Electromagnets	Knowledge: Starter Covering work from Yr7&8 Waves, Yr7&8 Matter, Yr7&8 Enquiry Process	Knowledge: Starter Covering work from Yr7&8 Electromagnets, Yr7&8 Waves,	Knowledge: Starter Covering work from Yr7&8 Ecosystems, Yr7&8 Earth, Yr7&8 Organisms, Yr7&8 Genes

		covering previous and current topics	Seneca covering previous and current topics	Seneca covering previous and current topics	Seneca covering previous and current topics	Yr7&8 Matter, Yr7&8 Reactions, Yr7&8 Earth, Yr7&8 Organisms Seneca covering previous and current topics	Seneca covering previous and current topics
		Skills: EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.7 Critique Claims EP2.8 Justify Opinions EP2.9 Collect data EP2.10 Devise Questions EP2.11 Plan variables EP2.12 Test Hypotheses EP2.13 Estimate Risks EP2.14 Examine Consequences EP2.15 Review Theories	Skills: EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.13 Estimate Risks	Skills: EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.12 Test Hypotheses EP2.13 Estimate Risks	Skills: EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.5 Communicate Ideas EP2.6 Construct Explanations EP2.12 Test Hypotheses EP2.13 Estimate Risks	Skills: EP2.1 Analysing Patterns EP2.2 Discuss limitations EP2.3 Draw Conclusions EP2.4 Present Data EP2.6 Construct Explanations EP2.9 Collect data EP2.10 Devise Questions EP2.12 Test Hypotheses	Skills: EP2.5 Communicate Ideas EP2.14 Examine Consequences EP2.15 Review Theories
	Assessment (for learning)	End of unit assessment: Topic Test Forces Topic Test Electromagnets LAQ EP LAQ Forces LAQ Electromagnets RP Electromagnets	End of unit assessment: Topic Test Energy Topic Testy Waves LAQ Energy LAQ Waves Pract Energy	End of unit assessment: Topic Test Matter LAQ Matter	End of unit assessment: Topic Test Reactions Topic Test Earth LAQ Reactions LAQ Earth Pract Reactions Pract Earth	End of unit assessment: Topic Test Organisms Topic Test Ecosystems LAQ Organisms LAQ Ecosystems RP Organisms Pract Eco Year 8 Big Test	End of unit assessment: Topic Test Genes LAQ Genes
		Cumulative Assessment: Starter Covering Yr7&8 Enquiry Process, Yr7&8 Forces Seneca covering previous and current topics KS3 Sections 3.1.5, 3.1.6, 3.2.1, 3.2.2, 3.2.3, 3.3.7, 3.3.8, 3.4.1, 3.4.2, 3.4.5, 3.4.6, 3.5.2, 3.5.3 Written Revision HW	Cumulative Assessment: Starter Covering work from Yr7&8 Electromagnets, Yr7&8 Forces, Yr7&8 Enquiry Process Seneca covering previous and current topics KS3 Sections 1.1.1, 1.1.3, 1.1.9, 2.4.1, 2.4.2, 3.1.8, 2.8.4, 3.1.2, 3.1.3, 3.3.4, 3.4.5, 3.6.1, Written Revision HW	Cumulative Assessment: Starter Covering work from Yr7&8 Forces, Yr7&8 Electromagnets Seneca covering previous and current topics KS3 Sections 1.1.7, 1.1.8, 1.1.9, 2.6.1, 2.6.2, 2.6.3, 2.6.4, 3.1.2, 3.1.3, 3.1.4, 3.1.7, Written Revision HW	Cumulative Assessment: Starter Covering work from Yr7&8 Waves, Yr7&8 Matter, Yr7&8 Enquiry Process Seneca covering previous and current topics KS3 Sections 2.1.1, 2.1.2, 2.2.3, 2.4.3, 2.5.1, 2.6.5, 2.7.2, 2.8.1, 2.8.2, 2.8.3, 2.8.5, 2.8.6, 3.2.4, 3.2.5, 3.2.7 Written Revision HW	Cumulative Assessment: Starter Covering work from Yr7&8 Electromagnets, Yr7&8 Waves, Yr7&8 Matter, Yr7&8 Reactions, Yr7&8 Earth, Yr7&8 Organisms Seneca covering previous and current topics KS3 Sections 1.1.1, 1.1.2, 1.1.4, 1.1.5, 1.1.7, 1.1.9, 1.1.10, 1.1.16, 3.3.1, 3.3.2, 3.3.3, 3.3.6 Written Revision HW	Cumulative Assessment: Starter Covering work from Yr7&8 Ecosystems, Yr7&8 Earth, Yr7&8 Organisms, Yr7&8 Genes Seneca covering previous and current topics KS3 Sections 1.1.4, 1.3.1, 2.2.1, 2.3.1, 1.4.1, 1.4.2, 3.3.9, 3.3.10, Written Revision HW Also revision Summary of KS3 Physics, Chemistry Biology in prep for KS4
	Literacy focus	Command words: Enquiry Process LAQ Describe Draw Explain Forces LAQ Draw Explain Electromagnets LAQ Compare Describe Explain	Command words: Energy LAQ Describe Explain Suggest Waves LAQ Describe Write Draw Compare	Command words: Matter LAQ State Give Draw Explain Define Compare	Command words: Reactions LAQ State Write Describe Produce Explain Earth LAQ Describe Explain	Command words: Organisms LAQ Describe Explain Suggest Ecosystems LAQ Describe Explain	Command words: Genes LAQ Describe Explain Give
		Other literacy foci: Glossaries used for development of vocabulary LAQ in EP, Forces and Electromagnets	Other literacy foci: Glossaries used for development of vocabulary LAQ in Energy and Waves	Other literacy foci: Glossaries used for development of vocabulary LAQ in Matter	Other literacy foci: Glossaries used for development of vocabulary LAQ in Reactions and Earth	Other literacy foci: Glossaries used for development of vocabulary LAQ in Organisms and Ecosystems	Other literacy foci: Glossaries used for development of vocabulary LAQ in Genes.

	Numeracy focus	Enquiry Process Variables Ratio Patterns 4a Graphs Forces Units Taking measurements Scales Drawing tables Patterns 2b Means 2f Mean 3c Substitute into eqns 4a Graphs 4c Plot graphs 5b 2D model Electromagnets Units Draw table Scale 5b 2D model	Energy Units Taking measurements Drawing tables 2b means 2f Mean 3c substituting into eqns Waves 2h Order of magnitude 5b 2D models	Matter Symbols 5b 2D model	Reactions Units Calculations 3c Substitution int eqns 5b 2D modelling Earth 4a Graphs 4c Plot graphs	Organisms Scales Units Taking measurements Drawing tables 2b means 2f mean 4c Plotting graphs Ecosystems Units Taking measurements Draw tables 2b Means 2f Mean 4c Plot graphs 5b 2D model	Genes Deep time 4c Plotting graphs 5b 2D/3D models
	SMSC / British Values	Social Understanding how scientists collect data and how ideas developed and are communicated to the public. Risk /benefit analysis Spiritual Developing awareness of how forces and electricity work. Moral The idea of critically evaluating ideas presented to us, and testing ideas. Risk /benefit analysis	Spiritual Developing understanding of what energy is and where waves fit into everyday experiences.	Spiritual Developing understanding of the nature of the matter that makes up all things.	Spiritual Developing understanding of chemical reactions Developing understanding of the structure of Earth and of deep time. Social Developing understanding of impact of human activity on the planet.	Spiritual Developing understanding of what all living things are made of. Developing understanding of the interlinked nature of all the systems on Earth.	Spiritual Developing understanding of how inheritance occurs.
	Safeguarding	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Forces - handling fluids at pressure	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Waves - risks to hearing from sound	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Matter - identify risks posed by different subsatnces	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units.Eg Earth - identify risks posed to due to global warming and other environmental concerns	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Organisms - assessing the impact of a variety of behaviours on their health.	In all practicals students will be taught to assess and mitigate risk, there are practicals in all units. Eg Genes - awareness of genetic diseases and their impact.

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y9	Topic title	B1 – Cells Structure and Transport B2 – Cell Division	C1 – Atomic Structure C2 – Periodic Table	P1 – Conservation and Dissipation of energy P2 – Energy Transfer by Heating P3 – Energy Resources	B3 – Organisations and Digestive System B4 – Organising Animals and Plants	B5 – Communicable Diseases B6 – Preventing and Treating Disease	B7 – Non-Communicable Diseases B16 – Organising an Ecosystem
	Building on KS3 (Skills and content)	The ‘big ideas’ across science have been introduced across the KS3 curriculum. These ‘big ideas’ are: In biology – cells and interdependence. In Chemistry – atoms. In Physics – energy and forces (and atoms different focus to chemistry). All of these key ideas are revisited and built upon across yr9. Scientific enquiry skills that have been introduced across key stage 2 and key stage 3 are now built upon and focused into 4 areas – thinking scientifically, experimental skills, analysis and evaluation skills and using scientific vocabulary, quantities and units.					
	Intent	Students are to build on the key ‘big ideas’ in science that they covered in KS3. This term looks at ‘big idea’ in biology of cells. Students will learn about cells, the organisation of cells and how substances are moved in and out of cells. The skills of scientific thinking will built on via the T&L opportunities in the classroom. Students will also be continue to build on investigative skills learnt at previous key stages by completing 2 key required practical's that will give the opportunity to cover experimental skills and analysis and evaluation skills.	Students are to build on the key ‘big ideas’ in science that they covered in KS3. This term looks at ‘big idea’ in chemistry of atoms. Students will learn about elements, compounds, mixtures, how these can be separated atoms, atoms and their structure and how through the understanding of the atomic structure how we have been to determine patterns in chemical behaviours. Scientific thinking skills, particularly in relation to how scientific theories develop and change over time will be focussed on this period.	Students are to build on the key ‘big ideas’ in science that they covered in KS3. This term looks at ‘big idea’ in physics of energy. Students will learn about what energy is and how systems transfer and transform energy, how energy allows us to determine whether a situation can occur or not. Students will also look at how energy is transferred through materials and where humans are able to use different energy sources. The skills of scientific thinking will built on via the T&L opportunities in the classroom and the ethics around the applications and implications of science will be covered relation to energy use. Students will also be continue to build on investigative skills learnt at previous key stages and in the first term by completing a key required practical that will give the opportunity to cover experimental skills and analysis and evaluation skills.	Students are now building further on the ‘big idea’ in biology of cells by learning about the complex biological systems within the human body. Students will learn cells are organised into tissues and organs and how organs operate together in organ systems. Students will focus on the digestive organ system and the role of enzymes within it and then the circulatory and respiration systems in humans and then finally on transport systems within plants. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom. Experimental skills and analysis and evaluation skills will further built on through the completion of 2 further key required practicals.	Students continue building further on the ‘big idea’ in biology of cells by learning about the further complex biological systems within the human body. Students will learn about contagious diseases, their causes and how the human body responds to infections. Students will also focus on how scientific development has led to range of drugs that can help the human body fight infection and develop immunity. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, with the development of the idea of ‘peer review’ delivered through the context of drug development.	Students continue building further on the ‘big idea’ in biology of cells by learning about the further complex biological systems within the human body. Then students will also be introduced to the ‘big idea’ in biology of interdependence by looking at the interconnection of living organisms across an ecosystem and how all living things depend on each other within a complex interconnection. Students will learn about non-contagious diseases, their causes and risk factors and how the human body responds to them. Students will also focus on feeding relationships between living things and how key elements are cycled around living organisms. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, with the development of the idea of ‘evaluating risks’ delivered through the context of ‘life-style diseases.
	Knowledge Skills Understanding	B1 - Cells, microscopes, Cell differentiation, specialisation in plant and animal cells, Diffusion, Osmosis, Active transport, exchange materials 1.1, 1.2, 1.5, 4.4, RP – 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 1a, 1b, 1c, 1d, 2a, 2h, 3a, 3d, 5c, B2 - Cell Division, growth and differentiation, Stem Cells and dilemmas 1.2 1.1 – Developing theories 1.2 – Using models 1.5 – Evaluating risks 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion	C1 - Atoms and radiation, chemical equation, separating mixtures, fractional distillation and paper chromatography, history and structure of the atom, ions and isotopes, electronic structure 1.1, 1.2, 1.6, 2.2, 2.3, 4.3, 1b, 1d, 5c, C2 - development of the periodic table, electronic structures and the periodic table, group 1, group 7, explaining trends 1.1, 1.2, 1.6, 1.1 – Developing theories 1.2 – Using Models 1.6 – Peer Review 2.2 – Planning investigations 2.3 – Selecting equipment 4.3 – Using SI units	P1 - Energy stores, and conversion of energy, energy and work, GPE, KE and Elastic stores, Energy dissipation, efficiency, Electrical appliances and power 1.2, 1a, 1c, 2c, 3b, 3c, 4a, P2 - conduction and Specific Heat Capacity, Heating and insulating buildings, 1.2, RP – 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 1a, 2g, 2h, 3b, 3c, 3d, P3 - Energy demands, energy from wind and water, Power from the sun and earth, energy and the environment, Big energy issues 1.3, 4.4 1a, 1b, 1c, 2c, 4a, 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling	B3 - Tissues and organs, human digestive system, chemistry of food, catalysts and enzymes, enzyme action, making digestion efficient 1.2 RP – 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 1c, 2b, 2h, 4a, 4c, B4 - the blood, blood vessels, the heart, lungs, breathing and gas , tissues and organs in plants, transport systems in plants, evaporation and transpiration 1.3, 1.4, 1.5, 1a, 1b, 1c, 1d, 2a, 2b, 2d, 4a, 4c, 5c, 1.3 – Using evidence and ethics 1.4 – Applications and implications 1.5 – Evaluating risks 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods	B5 - heath and disease, pathogens, preventing infections, viral diseases, bacterial diseases, diseases caused by fungi and protists, human defence responses 1.2, 1.4, 2c, 2d, 2g, 2h, 4a, B6 - vaccination, antibiotics and painkillers, discovering drugs, developing drugs. 1.4, 1.6 2b, 1.4 – Applications and implications 1.6 – Peer Review 1.1 – Developing theories 1.4 – Applications + implications 1.5 – Evaluating risks 1.6 – Peer Review 2.2 – Planning investigations 2.3 – Selecting equipment 2.5 – Appropriate sampling technique 3.2 – Translating data from graph to numeric 3.3 – Mathematical analysis 3.5 - Conclusions 3.6 – Explaining hypotheses	B7 - non-communicable diseases, cancer, smoking and risks, diet, exercise and disease, alcohol and carcinogens B16 - feeding relationships, material cycling, carbon cycle 1.2 – Using models 1.4 – Applications and implications 1.5 – Evaluating risks 1.2 – Using models 1.4 – Applications + Implications 1.5 – Evaluating risks 3.1 – Drawing tables and charts 3.2 – Translating data from graphs to numeric 3.3 – Mathematical analysis 3.5 - Conclusions 3.6 – Explaining hypotheses 4.1 – using scientific vocab

		<p>3.6 – Explain hypothesis 3.7 – Evaluate data 3.8 – communicating findings 4.4 – Using prefixes</p> <p>1.2 – using models 1.3 - Using evidence and ethics 1.4 – Applications and implications 2.2 – Planning investigations 2.3 – Selecting equipment 2.4 – Acting Safely in experiments 2.7 – Evaluate methods 3.3 – Mathematical analysis 3.5 - Conclusion 3.8 – Scientific reports 4.1 – Using scientific vocab 4.2 – Using scientific quantities 4.3 – Using units 4.4 – Using prefixes 4.5 – Converting units</p>		<p>2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data 3.8 – communicating findings 4.4 – Using prefixes</p> <p>1.4 – Applications + implications 1.5 – Evaluating risks 2.2 – Planning investigations 2.4 – Acting safely in experiments 3.1 – Drawing tables and charts 3.2 – Translating data from graph to numeric 3.3 – Mathematical analysis 3.5 - Conclusions 3.7 – Evaluating data</p>	<p>3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data 3.8 – communicating findings</p> <p>1.1 – Developing theories 1.2 – Using models 1.4 – Applications + implications 1.5 – Evaluating risks 2.2 – Planning investigations 2.3 – Selecting equipment 2.4 – Acting Safely in experiments 2.5 – Appropriate sampling techniques 2.7 – Evaluating methods 3.1 – Drawing tables and charts 3.2 – Translating data from graph to numeric 3.3 - Mathematical analysis 3.5 - Conclusions 3.6 – Explaining hypothesis 3.8 – Scientific reports 4.1 – Using scientific vocab</p>	<p>3.7 – Evaluating data 3.8 – Scientific reports 4.1 – using scientific vocab</p>	
Knowledge and skills revisited	<p>Knowledge:</p> <p>Topic Review -</p>	<p>Knowledge: Cells 1</p> <p>Topic Review -</p>	<p>Knowledge: Cells 2 Atomic structure +Periodic table 1</p> <p>Topic Review -</p>	<p>Knowledge: Cells Atomic structure + Periodic table 2 Energy 1</p> <p>Topic Review -</p>	<p>Knowledge: Atomic structure + Periodic table 3 Energy 2 Organisation 1</p> <p>Topic Review -</p>	<p>Knowledge: Organisation 2 Infection and Response 1 Infection and Response 2</p> <p>Topic Review -</p>	
	<p>Skills:</p>	<p>Skills: 1.1 – Developing theories 1.2 – Using Models 2.2 – Planning investigations 2.3 – Selecting equipment</p> <p>1.2 – using models 2.2 – Planning investigations 2.3 – Selecting equipment 4.3 – Using units</p>	<p>Skills: 1.2 – Using models 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data 3.8 – communicating findings 4.4 – Using prefixes</p> <p>1.4 – Applications + implications 2.2 – Planning investigations 2.4 – Acting safely in experiments 3.3 – Mathematical analysis 3.5 - Conclusions</p>	<p>Skills: 1.3 – Using evidence and ethics 1.4 – Applications and implications 1.5 – Evaluating risks 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data 3.8 – communicating findings</p> <p>1.2 – Using models 1.4 – Applications + implications 1.5 – Evaluating risks 2.2 – Planning investigations 2.3 – Selecting equipment</p>	<p>Skills: 1.4 – Applications and implications 1.6 – Peer Review</p> <p>1.1 – Developing theories 1.4 – Applications + implications 1.5 – Evaluating risks 2.2 – Planning investigations 2.3 – Selecting equipment 2.5 – Appropriate sampling technique 3.2 – Translating data from graph to numeric 3.3 – Mathematical analysis 3.5 - Conclusions 3.6 – Explaining hypotheses 3.7 – Evaluating data 3.8 – Scientific reports 4.1 – using scientific vocab</p>	<p>Skills: 1.2 – Using models 1.4 – Applications and implications 1.5 – Evaluating risks</p> <p>1.2 – Using models 1.4 – Applications + Implications 1.5 – Evaluating risks 3.1 – Drawing tables and charts 3.2 – Translating data from graphs to numeric 3.3 – Mathematical analysis 3.5 - Conclusions 3.6 – Explaining hypotheses 4.1 – using scientific vocab</p>	

					2.4 – Acting Safely in experiments 2.7 – Evaluating methods 3.1 – Drawing tables and charts 3.2 – Translating data from graph to numeric 3.3 - Mathematical analysis 3.5 - Conclusions 3.8 – Scientific reports 4.1 – Using scientific vocab		
Assessment (for learning)	End of unit assessment: B1 RP1 - animal and plant cells B1 RP2 - Osmosis in plants B1 + B2 topic test	End of unit assessment: LAQ Separating mixtures C1 topic test LAQ Group 1 reactivity C2 topic test	End of unit assessment: LAQ Energy dissipation RP3 Specific Heat Capacity P1 + P2 topic test (combined) LAQ Wind power P3 Topic test	End of unit assessment: RP4 chemistry of food, RP5 how the digestive system works B3 topic test LAQ heart valves B4 topic test	End of unit assessment: LAQ Preventing infections B5 topic test LAQ Vaccinations B6 topic test	End of unit assessment: LAQ smoking and risk factors B7 topic test LAQ feeding relationships B16 topic test	
	Cumulative assessment: 10MT on 10MT on 10MT on Seneca HW1 – KS3 science B1.1 (1.1.1 to 1.1.5) Seneca HW2 – KS3 science C2.2, 2.2 Seneca HW3 – KS3 science P3.1 Seneca HW4 – KS3 science B1.1 (1.1.6 to 1.1.10) Seneca HW5 – KS3 science C2.3, 2.4 and 2.5 Seneca HW6 – KS3 science P3.2 Seneca HW7 – Seneca HW8 –	Cumulative assessment: 10MT – BP1 test 1 cells Seneca HW1 – KS3 science B1.2, 1.3 and 1.4 Seneca HW2 – KS3 science C2.6 and 2.7 Seneca HW3 – KS3 science P3.3 Seneca HW4 – KS3 science C2.8 and P3.6 Seneca HW5 – KS3 science P3.4 and 3.5 Seneca HW6 – KS4 Biology B1.1 Seneca HW7	Cumulative assessment: 10MT – CP1 test 18 atomic structure and periodic table 10MT – BP1 test 1 cells Seneca HW1 – KS4 Biology B1.2 and 1.3 Seneca HW2 – KS4 Chemistry C1.1 Seneca HW3 – KS4 Biology B1.1 Seneca HW4 – KS4 Biology B1.2 and 1.3 Seneca HW5 – KS4 Chemistry C1.1 Seneca HW6 – KS4 Physics P1.1 and 1.2	Cumulative assessment: 10MT – PP1 test 35 energy 10MT – CP1 test 18 atomic structure and periodic table 10MT – BP1 test 1 cells Seneca HW1 – KS4 Physics P1.3 Seneca HW2 – KS4 Biology B1.1 Seneca HW3 – KS4 Biology B1.2 and 1.3 Seneca HW4 – KS4 Chemistry C1.1 Seneca HW5 – KS4 Physics P1.1 and 1.2 Seneca HW6 – KS4 Physics P1.3	Cumulative assessment: 10MT – PP1 test 36 Energy 10MT – BP1 test 2 organisation 10MT – CP1 test 18 atomic structure and periodic table Seneca HW1 – KS4 Biology B2.1 and 2.2 Seneca HW2 – KS4 Physics P1.1 and 1.2 Seneca HW3 – KS4 Physics 1.3 Seneca HW4 – KS4 Biology B2.1 and 2.2 Seneca HW5 – KS4 Biology B2.3 Seneca HW6 – KS4 Biology B2.5	Cumulative assessment: 10MT – BP1 test 3 organisation 10MT – BP1 test 4 infection and response 10MT – BP1 test 5 infection and response Seneca HW1 – KS4 Biology B3.1 Seneca HW2 – KS4 Biology B2.1 and 2.2 Seneca HW3 – KS4 Biology B2.3 Seneca HW4 – KS4 Biology B2.5 Seneca HW5 – KS4 Biology B3.1 Seneca HW6 – KS4 Biology B2.4	
	Literacy focus	Command words: Name Give Identify Describe Explain Calculate Determine Suggest Evaluate	Command words: Name Give Complete State Describe Explain Suggest Calculate	Command words: Name Give Complete Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Give State Identify Describe Explain Suggest Determine Calculate Predict Estimate	Command words: Name Give State Complete Describe Explain Suggest Calculate Classify Evaluate	Command words: Name Give State Complete Describe Explain Suggest Calculate
		Other literacy foci:	Other literacy foci: LAQ in C1 LAQ in C2	Other literacy foci: LAQ in P1 +P2 LAQ in P3	Other literacy foci: LAQ in B4	Other literacy foci: LAQ in B5 LAQ in B6	Other literacy foci: LAQ in B7 LAQ in B16
Numeracy focus	1a - using decimals 1b – using standard form 1c – using ratio/fraction/percentage 1d – making estimates 2a – appropriate s.f. 2h – orders of magnitude 3a – using mathematical symbols 3b – re-arrange equations 3d – solving algebraic equations	1b – using standard form 1d – making estimates 5c – calculate areas	1a – using decimals 1b – using standard form 1c – Using ratio/fraction/percentage 2c – Drawing tables/charts 2g – identify correlations from graphs 2h – order of magnitude 3b – re-arrange equations	1a – using decimals 1b – using standard form 1c – using ratio/fraction/percentage 1d – making estimates 2a – using s.f. 2b – finding means 2d - Sampling 2h – order of magnitude	2b – Finding means 2c – Drawing tables/charts 2d – Sampling 2g – identifying correlations using graphs 2h – order of magnitude 4a – translate graphs to numeric	1b – Using standard form 2c – Drawing tables charts 2d – Sampling 2g – Identifying correlations using graphs 4a – translate graphs to numeric 5c – Calculate areas	

		5c – calculate areas		3c – substitute values into equations 3d – solve algebraic equations 4a – translate graphs to numeric	4a – translate graphs to numeric 4c – plotting graphs 5c – Calculate areas		
	SMSC / British Values	Ethics regarding production and use of stem cells	Spiritual – understanding the fabric of the universe	Social and moral discussion around use of energy sources and implications for society	Spiritual – understanding how the human body works	Ethics regarding vaccinations and making evidence based decisions. Ethics regarding developing drugs and the testing on animals	Social and cultural – effect of life choices on health and implications for our society
	Safeguarding	Risk management and handing risk (primarily through practical work)		Risk management and handing risk (primarily through practical work)	Risk management and handing risk (primarily through practical work) Discussion around balanced diets and eating disorders	Discussion of sexually transmitted disease and how to have safe sex.	Discussion of ‘life-style’ diseases and the risk factors and behaviours that can increase you risk at getting them

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y10	Topic title	Structure and Bonding (C3) Electric Circuits (P4) Electricity in the home (P5) Photosynthesis (B8) Respiration (B9)	Quantitative Chemistry (C4) The Reactivity series (C5) The nervous system (B10)	Hormonal coordination (B11) Molecules and Matter (P6) Radioactivity (P7)	Electrolysis (C6) Energy changes (C7) Forces in Balance (P8)	Rates of reactions equilibrium (C8) Motion (P9) Reproduction (B12)	Variation and evolution (B13) Crude oil and fuels (C9)
	Building on Key KS4 year 9 (Skills and content)	The 'big ideas in science that were introduced across KS3 and developed further across yr9 continue to be re-visited and developed across yr10. The 'big ideas'covered in yr (Cells, Atoms, Energy) are further developed and new ones at KS4 (seen at KS3) are introduced (Forces) The scientific skills continued to be regularly revisited across yr9 continued to re-visited across the yr10					
	Intent	Students are now building further on the 'big idea' in chemistry of atoms, the 'big idea' in biology of cells and the 'big idea' in physics of energy by learning about Structure and bonding, electricity and bioenergetics. Students will learn about how atoms bond together to form different types of structures and that properties derived from the structure. Students will learn about current, potential difference and resistance, how they relate to each other and how they affect the operation of different types of circuits. Finally students will learn about how living things use energy to produce food and then how this food is used to release energy to allow living organisms to operate. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, as they have now all been introduced. Experimental skills and analysis and evaluation skills will be further built on through the completion of 2 further key required practicals.	Students are continuing building further on the 'big idea' in chemistry of atoms and the 'big idea' in biology of cells by learning about quantitative chemistry, chemical changes and homeostasis. Students will learn about the conservation of mass and how this can be used to calculate reacting masses and products, how chemicals react with each other in predictable ways and this can be used to produce specific products. Students will also learn about how the human body keeps a constant internal environment and how parts of the body communicate with each other to achieve this. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, as they have now all been introduced. Experimental skills and analysis and evaluation skills will be further built on through the completion of a further key required practical.	Students are continuing building further on the 'big idea' in biology of cells by learning about hormonal systems within the body. A new 'big idea' in physics on atomic structure (particular focus on the nucleus) is introduced (this has some cross over with chemistry), where students will learn about nucleus structure and behaviour. Students will learn about how the blood glucose level in the body is controlled and how hormones control the menstrual cycle. Students will also learn what happens to atomic arrangement during states of matter changes, how the nucleus of the atom was discovered and the behaviour of unstable nuclei in relation to radioactivity. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, as they have now all been introduced. Experimental skills and analysis and evaluation skills will be further built on through the completion of a further key required practical.	Students are continuing building further on the 'big idea' in chemistry of atoms by learning about how elements can be separated from each other by chemical reactions. A further 'big idea' in physics on forces is introduced by learning about how objects interact within systems. Students will learn about how reduction reactions can be used to extract useful chemicals and elements from compounds and the energy changes involved in chemical reactions. Students will also learn about how forces affect objects. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, as they have now all been introduced. Experimental skills and analysis and evaluation skills will be further built on through the completion of 2 further key required practicals.	Students are continuing building further on the 'big idea' in chemistry of atoms, the 'big idea' in physics of forces and the 'big idea' in biology of cells by learning about how rates of chemical reactions can be controlled, characteristics of motion and how living things reproduce. Students will learn about What factors affect the rate of reaction and how these can be controlled, dynamic equilibrium in reactions and how this can be controlled. Student will also learn about velocity and acceleration and how this information can be represented graphically. Finally students will learn about types of reproduction, how cells are able to copy themselves and how humans have been able to manipulate this process. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, as they have now all been introduced. Experimental skills and analysis and evaluation skills will be further built on through the completion of a further key required practical.	Students are continuing building further on the 'big idea' in biology of cells and the 'big idea' in chemistry of atoms by learning about how all living species have evolved on Earth, how crude oil can be made useful and what happens during burning. Students will learn about the process of natural selection, selective breeding and genetic technologies. Finally students will learn about how we separate crude oil, what these fractions are made from and how these fractions undergo a burning reaction. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, as they have now all been introduced.
	Knowledge Skills Understanding	C3 - states of matter, atoms, ions, ionic bonding, giant ionic structures, covalent bonding, simple molecules, giant covalent structures, fullerenes and graphene, bonding in metals, giant metallic structures 1.2, 1.4, 2.2, all 4 1c, 5b, P4 - current, charge, p.d., resistance, components, series and parallel circuits 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7,3.8, all 4 (RP) 1c, 3b, 3c, 3d, 4c, 4d, 4e, P5 - AC and DC, cables and plugs, power and p.d., current and energy transfer, appliances and efficiency 1.2, 1.4, 1.5, all 4	C4 - relative mass and moles, equations and calculations, masses to balance equations, expressing concentrations 1.2, 4 1a, 1b, 1c, 2a, 3a, 3b, 3c, all 4 C5 - reactivity series, displacement reactions, extracting metals, salts from metals and insoluble bases, neutralisation, pH, strong and weak acids 1.2, 2.2, 2.3, 2.4, 2.6, 2.7, 3.1, all 4 (RP) 2h, B10 - homeostasis, nervous system, reflex actions, 1.2, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, all 4 (RP) 2b, 2c, 4a,	B11 - hormonal control, blood glucose levels, diabetes, negative feedback, human reproduction, hormones, menstrual cycle, artificial fertility control, infertility treatments 1.2, 1.3, 1.4, all 4 1d, 2c, 4d, P6 - states of matter, changes of state, internal energy, specific latent heat, gas pressure and temp 1.2 2.2, 2.3, 2.4, 2.6, 2.7, 3.1, 3.3, 3.4, 3.7, all 4 (RP) 1a, 1b, 1c, 3b, 3c, 3d, 4a, 4b, 4c, 5c, P7 - atoms/radiation, discovery of the nucleus, changes in the nucleus, alpha, beta, gamma,	C6 - electrolysis, changes at the electrodes, extraction of aluminium, electrolysis of aqueous solutions 1.2, 1.4, 1.5, 2.2, 2.3, 2.4, 2. 6, 3.1, 3.5, all 4 (RP) 1c C7 - Exothermic and endothermic reactions, using energy transfers from reactions, reaction profiles, bonding energy calculations 1.2, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.3, 3.4, 3.5, 3.6, 3.7, all 4 (RP) 1a, 4a, 1b, 2a, 3b, P8 - vectors and scalars, forces between objects, resultant forces, centre of mass, parallelogram of forces, resolution of forces 1.2, all 4	C8 - Rates of reaction, collision theory and surface area, effect of temperature, concentration and pressure, catalysts, reversible reactions, energy, dynamic equilibrium, altering conditions 1.2, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, all 4 (RP) 1a, 1b, 1c, 1d, 2a, 2b, 2c, 3a, 3b, 4a, 4b, 4c, 4d, 4e, 5a, P9 - speed/distance/time graphs, velocity and acceleration, analysing motion graphs 3.2 1a, 1b, 1c, 1d, 3b, 3c, 3d, 4a, 4b, 4c, 4d, 4f, B12 - reproduction, cell division in sexual reproduction, DNA and the	B13 - variation, evolution and natural selection, selective breeding, genetic engineering, ethics of genetic technologies 1.2, all 4 1c, 2g, 4a, C9 - Hydrocarbons, fractional distillation of oil, burning hydrocarbons, cracking hydrocarbons 1.2, 1.4, 2.4, all 4 1c, 2c, WS: 1.2 – Using Models 1.4 – Applications and Implications 2.4 – Working safely in a lab All 4 – Vocab, quantities, units

	<p>3b, 3c, 4a,</p> <p>B8 - photosynthesis, plants using glucose, limiting factors 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.3, 3.4, 3.5, 3.6, 3.7 all 4 (RP) 1a, 1c, 2c, 3a, 3d, 4a, 4c,</p> <p>B9 - anaerobic and aerobic respiration, metabolism and the liver 1.2 1c, 4a,</p> <p>WS: 1.2 – Using Models 1.4 – Applications and Implications 1.5 – Risk and Perception 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units</p>	<p>WS: 1.2 – Using Models 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units</p>	<p>activity and half-life 1.1, 1.2, 1.4, all 4 1a, 1b, 1c, 2a, 3c,</p> <p>WS: 1.1 – Developing theories 1.2 – Using Models 1.3 – Using Evidence and ethics 1.4 – Applications and Implications 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.7 – Evaluate data All 4 – Vocab, quantities, units</p>	<p>1a, 2a, 5a, 5b,</p> <p>WS: 1.2 – Using models 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units</p>	<p>genome, inheritance in action, genetics and screening 1.1, 1.2, 1.4, all 4 1c, 2c, 2e, 2h, 3a, 4a,</p> <p>WS: 1.1 – developing theories 1.2 – Using Models 1.4 – applications and Implications 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data 3.8 – communicating findings All 4 – Vocab, quantities, units</p>	
Knowledge and skills revisited	<p>Knowledge: Energy Cells Organisation Infection and response Bonding and structure Electricity</p> <p>Topic Review – Topic Review -</p>	<p>Knowledge: Bonding and structure Electricity Bioenergetics Organisation</p> <p>Topic Review – Topic Review -</p>	<p>Knowledge: Quantitative Chemistry Bonding and Structure Electricity Bioenergetics Chemical changes Homeostasis and Response</p> <p>Topic Review – Topic Review -</p>	<p>Knowledge: Bioenergetics Homeostasis and Response Quantitative Chemistry Particle model Atomic structure Chemical changes</p> <p>Topic Review – Topic Review -</p>	<p>Knowledge: Chemical changes Paper 1 biology Energy changes Particle model Forces Atomic structure Electricity Bioenergetics</p> <p>Topic Review – Topic Review – Topic Review –</p>	<p>Knowledge: Chemical changes Energy changes Rate of Reaction Forces Paper 1 chemistry Paper 1 physics Atomic structure Inheritance, Variation and Evolution</p> <p>Topic Review – Topic Review – Topic Review – Topic Review –</p>
	<p>Skills: 1.2 – Using Models 1.4 – Applications and Implications 1.5 – Risk and Perception 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations</p>	<p>Skills: 1.2 – Using Models 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods</p>	<p>Skills: 1.1 – Developing theories 1.2 – Using Models 1.3 – Using Evidence and ethics 1.4 – Applications and Implications 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling</p>	<p>Skills: 1.2 – Using models 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations</p>	<p>Skills: 1.1 – developing theories 1.2 – Using Models 1.4 – applications and Implications 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations</p>	<p>Skills: 1.2 – Using Models 1.4 – Applications and Implications 2.4 – Working safely in a lab All 4 – Vocab, quantities, units</p>

		2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data 3.8 – communicating findings All 4 – Vocab, quantities, units	3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units	2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.7 – Evaluate data All 4 – Vocab, quantities, units	2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units	2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data 3.8 – communicating findings All 4 – Vocab, quantities, units	
	Assessment (for learning)	End of unit assessment: C3 LAQ on Ionic bonding C3 topic test P4 RP6 p.d. vs resistance P4 RP7 p.d /current characteristic P5 LAQ on cables and plugs P4+P5 combined topic test B9 LAQ on response to exercise	End of unit assessment: B8+B9 combined topic test C4 LAQ on quantitative chemistry C5 RP10 making a salt C4+C5 combined topic test Trial Exams 1 (yr9 content and some yr10)	End of unit assessment: B11 LAQ on negative feedback B10+B11 combined test P6 RP8 Density P7 LAQ on discovery of nucleus P6+P7 combined topic test	End of unit assessment: C6 RP11 electrolysis C7 RP12 Exo/Endo-thermic reactions C6+C7 combined topic test P8 LAQ on forces P8 topic test	End of unit assessment: C8 RP14 RoR – temperature and concentration C8 topic test P9 LAQ on velocity and acceleration P9 topic test B12 LAQ on inheritance B13 LAQ selective breeding	End of unit assessment: B12+B13 combined topic test Trial Exams 2 (Paper 1 for B/C/P) C9 LAQ on Burning C9 topic test
		Cumulative assessment: 10MT on PP1 test 35 10MT on PP1 test 36 10MT on BP1 test 2 10MT on BP1 test 3 10MT on BP1 test 4 10MT on BP1 test 5 10MT on Seneca HW1 – KS4 Biology 2.4 Seneca HW2 – KS4 Biology 2.3 Seneca HW3 – KS4 Chemistry 2.1, 2.2 and 2.3 Seneca HW4 – KS4 Biology 2.5 Seneca HW5 – KS4 Biology 3.1 Seneca HW6 – KS4 Physics 2.1 and 2.3 Seneca HW7 -	Cumulative assessment: 10MT on CP1 test 19 10MT on CP1 test 20 10MT on PP1 test 37 10MT on PP1 test 38 10MT on BP1 test 6 10MT on BP1 test 7 10MT on Seneca HW1 – KS4 Physics 2.2 and 2.4 Seneca HW2 – KS4 Biology 2.4 Seneca HW3 – KS4 Chemistry 2.1, 2.2 and 2.3 Seneca HW4 – KS4 Physics 2.1 and 2.3 Seneca HW5 – KS4 Physics 2.2 and 2.4 Seneca HW6 – KS4 Biology 4.1 and 4.2 Seneca HW7 -	Cumulative assessment: 10MT on CP1 test 21 10MT on CP1 test 19 10MT on CP1 test 20 10MT on PP1 test 37 10MT on PP1 test 38 10MT on BP1 test 6 Seneca HW1 – KS4 Chemistry 3.1 Seneca HW2 – KS4 Chemistry 4.1,4.2 and 4.3 Seneca HW3 – KS4 Chemistry 2.1, 2.2 and 2.3 Seneca HW4 – KS4 Biology 4.1 and 4.2 Seneca HW5 – KS4 Chemistry 3.1 Seneca HW6 – KS4 Biology 5.1 and 5.2	Cumulative assessment: 10MT on BP1 test 7 10MT on BP2 test 10 10MT on BP2 test 11 10MT on CP1 test 21 10MT on PP1 test 39 10MT on PP1 test 40 Seneca HW1 – KS4 Chemistry 4.1, 4.2 and 4.3 Seneca HW2 – KS4 Biology 5.3 Seneca HW3 – KS4 Physics 3.1, 3.2 and 3.3 Seneca HW4 – KS4 Biology 5.1 and 5.2 KS4 Biology 5.3 Seneca HW6 – KS4 Physics 4.1 and 4.2	Cumulative assessment: 10MT on CP1 test 22 10MT on BP1 test 8 mixed 10MT on CP1 test 23 10MT on PP1 test 39 10MT on PP2 test 43 10MT on PP1 test 40 Seneca HW1 – KS4 Chemistry 4.4 and 5.1 Seneca HW2 – KS4 Physics 3.1, 3.2 and 3.3 Seneca HW3 – KS4 Physics 2.1 and 2.3 Seneca HW4 – KS4 Physics 2.2 and 2.4 Seneca HW5 – KS4 Biology 4.1 and 4.2 Seneca HW6 – KS4 Chemistry 4.4 and 5.1	Cumulative assessment: 10MT on CP1 test 22 10MT on CP1 test 23 10MT on CP2 test 26 10MT on PP2 test 44 10MT on PP1 test 41mixed 10MT on CP1 test 24 mixed Seneca HW1 – Chemistry 6.1 and 6.2 Seneca HW2 – KS4 Physics 4.1 and 4.2 Seneca HW3 – Physics 5.1 and 5.2 Seneca HW4 – KS4 Biology 6.1 Seneca HW5 – KS4 Chemistry 6.1 and 6.2 Seneca HW6 –
	Literacy focus	Command words: Give Name Choose Identify Complete Suggest Describe Explain Calculate Predict Draw Plot Using Define Estimate Compare	Command words: Complete Name Give Write Describe Suggest Draw Plot Explain Calculate Use Compare Balance	Command words: Complete Give Name Choose List Write State Label Draw Plot Suggest Describe Explain Use Define	Command words: Complete Give Name Identify Suggest Describe Explain Use Draw Show Calculate Include Define Plan Evaluate Predict Sketch Provide Estimate	Command words: Complete Give Name Identify Choose State Describe Label Explain Use Draw Plot Calculate Compare Plan Sketch	Command words: Complete Give Name Choose Describe Suggest Explain Compare Draw Use Perform Balance Evaluate

		Other literacy foci: C3 LAQ on ionic bonding B9 LAQ on response to exercise	Other literacy foci: C4 LAQ on quantitative chemistry	Other literacy foci: B11 LAQ on negative feedback P7 LAQ on discovery of nucleus	Other literacy foci: P8 LAQ on forces	Other literacy foci: P9 LAQ on velocity and acceleration B12 LAQ on inheritance B13 LAQ selective breeding	Other literacy foci: C9 LAQ on Burning
	Numeracy focus	1a Using decimals 1c using ratios and fractions 2c drawing tables and charts 3b re-arrange equations 3c substitute values into equations 3d Solving simple equations 4a translate graph to number 4c Plotting a graph 4d Finding the gradient 4e Finding gradient of a curve 5b Visualise 2D/3D objects	1a Using decimals 1b using standard form 1c using ratios and fractions 2a Appropriate s.f. 2b Calculating means 2c drawing tables and charts 2h order of magnitudes 3a using mathematical symbols 3b re-arrange equations 3c substitute values into equations 4a translate graph to number	1a Using decimals 1b using standard form 1c using ratios and fractions 1d making estimates 2a Appropriate s.f. 2c drawing tables and charts 3b re-arrange equations 3c substitute values into equations 3d Solving simple equations 4a translate graph to number 4b Linear relationship ($y=mx+c$) 4c Plotting a graph 4d Finding the gradient 5c Calculating areas	1a Using decimals 1b using standard form 1c using ratios and fractions 2a Appropriate s.f. 3b re-arrange equations 4a translate graph to number 5a Using degrees 5b Visualise 2D/3D objects	1a Using decimals 1b using standard form 1c using ratios and fractions 1d making estimates 2a Appropriate s.f. 2b Calculating means 2c drawing tables and charts 2e Probability 2h order of magnitudes 3a using mathematical symbols 3b re-arrange equations 3c substitute values into equations 3d Solving simple equations 4a translate graph to number 4b Linear relationship ($y=mx+c$) 4c Plotting a graph 4d Finding the gradient 4e Finding gradient of a curve 4f Area below graph line 5a Using degrees	1c using ratios and fractions 2c drawing tables and charts 2g Scatter diagrams and correlations 4a translate graph to number
	SMSC / British Values	Spiritual – Structure of matter, how the universe and matter is held together. What are you made of.	Spiritual – understanding how the body works, maintaining an appropriate environment and how parts of your body communicate with each other	Ethical/Moral – contraception and IVF Ethical – Nuclear power and the dangers of radioactive waste		Ethical – genetic screening and the use of PGD	Spiritual – Evolution how has all the variety of life on Earth appeared. Ethical – selective breeding uses and dangers Ethical – genetic engineering uses and dangers
	Safeguarding	Risk management and handing risk (primarily through practical work) Exercise and its importance for physical and mental wellbeing		Discussion around hormonal control of the menstrual cycle and how birth control works		Brief discussion of sexual reproduction.	

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y11	Topic title	Evidence for evolution (B14) Chemical Analysis (C10) The Earth's Atmosphere (C11) The Earth's resources (C12)	Adaptations, inheritance and competition (B15) Biodiversity and Ecosystems (B17) Forces and motion (P10)	Electromagnets (P13) Wave Properties (P11) Electromagnetic Spectrum (P12)	Revision programme part 1	Revision programme part 2	
	Building on Key Stage 4 Year 10 (Skills and content)	The 'big ideas' in science continue to be built upon with now all being introduced at KS4 and all previously being introduced at KS3. The scientific skills introduced at KS3 and focused into the 4 areas at KS4 continue to regularly be re-visited and re-enforced across a variety of contexts					
	Intent	Students are continuing building further on the 'big idea' in biology of interdependence and the 'big idea' in chemistry of atoms by learning about the indisputable evidence for evolution, the analysis of chemical substances, the history and development of the atmosphere and how chemistry can be used in a sustainable way. Students will learn about the specific evidence for evolution and speciation, how bacteria are evolving resistance, how we can test the purity of chemicals, how the Earth's early atmosphere has change and how humans are changing it now along with the implications. Finally students will learn how science can be used in a way that supports sustainable development. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, as they have now all been introduced. Experimental skills and analysis and evaluation skills will be further built on through the completion of 2 further key required practicals.	Students are continuing building further on the 'big idea' in biology of interdependence and the 'big idea' in physics of forces by learning how communities interact with each other, living in a sustainable way and how forces can affect the motion of moving objects. Students will learn about the how sampling techniques can be used to find the abundance and distribution of living organisms and how human behaviour has led to destruction of habitats and pollution. Finally students will learn how forces can affect the velocity and acceleration of an object. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, as they have now all been introduced. Experimental skills and analysis and evaluation skills will be further built on through the completion of 2 further key required practicals.	Students are continuing building further on the 'big idea' in physics of forces and the 'big idea' in physics of energy by learning magnetic fields affect electrical fields and how energy is transferred by waves. Students will learn about what magnetic fields are, how they interact, and how interaction between magnetic and electrical fields can produce a motor. Finally students will learn how the types of waves, the characteristics of wave, their behaviour and the family of electromagnetic waves. Scientific thinking skills will continue to be developed through T&L opportunities in the classroom, as they have now all been introduced. Experimental skills and analysis and evaluation skills will be further built on through the completion of 2 further key required practicals.			
	Knowledge Skills Understanding	<p>B14 - evidence for evolution, fossils and extinction, antibiotic resistant bacteria, classification, new systems of classification 1.1, 1.2, 1.3, all 4 1b, 1d, 2a, 4a,</p> <p>C10 – Purity and formulations, testing purity using MP/BP, chromatography, calculating Rf values, gas tests 1.2, 1.6, 2.1, 2.2, 3.1, 3.2, 3.3, 3.5, 4.1 (RP) 1a, 1c, 1d, 2a, 3a, 3c</p> <p>C11 - history of the atmosphere, evolving atmosphere, greenhouse gases, Global climate change, atmospheric pollution 1.1, 1.2, 1.3, 1.4, 1.6, 2.2, 3.5, 3.6, 4.1, all 4 1c, 2c, 4a, 4c,</p> <p>C12 - finite and renewable resources, potable water, treating</p>	<p>B15 - importance of communities, organism in their environment, distribution and abundance, competition in animals and plants, adaptation in animals and plants 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 (RP) 1b, 2b, 2c, 2f, 4a, 4c, 5c</p> <p>B17 - population explosion, land, water and air pollution, deforestation and peat destruction, Global warming, maintaining biodiversity 1.4, 1.5, 2.6, 1c, 2c, 4a, 4c, 5c,</p> <p>P10 - forces and acceleration, weight and terminal velocity, forces and breaking, momentum, forces and elasticity 1.2, 1.5, 2.2, 1a, 1c, 1d, 1e, 2c, 2f, 2g, 2h, 3a, 3b, 3c, 4a, 4b, 4c,</p>	<p>P13 - magnetic fields, mag fields and electric currents, the motor effect 1.2, 2.2, 1a, 2a, 3b, 3c,</p> <p>P11 - nature of waves, properties of waves, reflection and refraction 1.2, 2.2, 2.3, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.7 (RP) 1b, 1c, 3b, 3c, 5a, 5b,</p> <p>P12 - EM spectrum, Light, IR, Microwaves and radio waves, communications, UV, X-rays and gamma rays, X-rays in medicine. 1.4, 1.5, 2.1, 2.2, 2.3 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 (RP) 1a, 1b, 1c, 3b, 3c,</p> <p>WS: 1.2 – Using models 1.4 – Applications and Implications 1.5 – Risks and perceptions</p>	Paper 1 Revision	Paper 2 Revision	

		<p>water waste, extracting metals from ores, life cycle assessments, reduce/reuse/recycle 1.2, 1.3, 1.4, 1.5, 2.2, 2.3, 3.2, (RP) all 4 1a, 1b, 1c, 1d, 2a, 2b, 2c, 2h, 4a,</p> <p>WS:</p> <p>1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.6 – Peer review 2.1 – Producing Hypotheses 2.2 – Plan an Experiment 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.5 - Conclusion 3.6 – Explain hypothesis All 4 – Vocab, quantities, units</p>	<p>WS:</p> <p>1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units</p>	<p>2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units</p>			
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		Seneca HW1 – KS4 Chemistry 7.1 Seneca HW2 – KS4 Physics 5.1 and 5.2 Seneca HW3 – KS4 Biology 6.1 Seneca HW4 – KS4 Biology 1.1 Seneca HW5 – KS4 Chemistry 1.1 Seneca HW6 – KS4 Biology 6.2 and 6.3 Seneca HW7 – KS4 Chemistry 8.1	Seneca HW1 – KS4 Physics 1.1 and 1.2 Seneca HW2 – KS4 Biology 1.2 and 1.3 Seneca HW3 – KS4 Chemistry 2.1, 2.2 and 2.3 Seneca HW4 – KS4 Chemistry 9.1 Seneca HW5 – KS4 Physics 1.3 Seneca HW6 – KS4 Chemistry 10.1 and 10.2 Seneca HW7 – KS4 chemistry 7.1	Seneca HW1 – KS4 Biology 2.1 and 2.2 Seneca HW2 – KS4 Chemistry 3.1 Seneca HW3 – KS4 Physics 2.1 and 2.3 Seneca HW4 – KS4 Biology 6.2 and 6.3 Seneca HW5 – KS4 chemistry 8.1 Seneca HW6 – KS4 Biology 7.1, 7.2 and 7.3	Seneca HW2 – KS4 Chemistry 9.1 Seneca HW3 – KS4 Chemistry 10.1 and 10.2 Seneca HW4 – KS4 Biology 5.1, 5.2 and 5.3 Seneca HW5 – Chemistry 6.1 and 6.2	Seneca HW1 – KS4 Physics 2.2 and 2.4 Seneca HW2 – KS4 Physics 6.1 and 6.2 Seneca HW3 – KS4 Biology 2.3 and 2.4 Seneca HW4 – KS4 Chemistry 4.1, 4.2 and 4.3 Seneca HW5 – KS4 Physics 3.1, 3.2 and 3.3 Seneca HW6 – KS4 biology 2.5 and 3.1	Seneca HW1 – Seneca HW2 – Seneca HW3 – Seneca HW4 – Seneca HW5 – Seneca HW6 – Seneca HW7 -
	Literacy focus	Command words: Give Name State Write Identify Draw Link Describe Suggest Explain Define Use/Using Calculate Compare Estimate	Command words: Complete Name Give State Draw Describe Suggest Explain Define Use Calculate	Command words: Complete Fill in Name Give Choose Identify Write Draw Label Describe Suggest Plot Explain Use Define Calculate Estimate Plan	Command words:	Command words:	Command words:
		Other literacy foci: LAQ on Antibiotic resistance LAQ on greenhouse gases	Other literacy foci: LAQ on air pollution	Other literacy foci: LAQ on magnetic fields and electric current	Other literacy foci:	Other literacy foci:	Other literacy foci:
	Numeracy focus	1a using decimals 1b using standard form 1c using ratios and fractions 1d making estimates 2a appropriate s.f. 2b Calculating means 2c drawing table and charts 2h order of magnitude 3a using mathematical symbols 3c substituting values into equations 4a Translate from graph to number 4c Plotting a graph	1a Using decimals 1b using standard form 1c using ratios and fractions 1d making estimates 2b Calculating means 2c drawing tables and charts 2f understanding averages 2g scatter graphs and correlations 2h order of magnitudes 3a using mathematical symbols 3b re-arrange equations 3c substitute values into equations 4a translate graph to number 4b Linear relationship ($y=mx+c$) 4c Plotting a graph 5c Calculating areas	1a Using decimals 1b using standard form 1c using ratios and fractions 2a appropriate s.f. 3b re-arrange equations 3c substitute values into equations 5a using degrees 5b visualise 2D/3D objects			
	SMSC / British Values	Spiritual – understanding out place in the universe, evidence for evolution Ethic/social – greenhouse gases, global warming and air pollution Social – sustainable development	Ethics/Social – greenhouse gases, global warming, air pollution, destruction of habitats Spiritual – understanding the laws of space and time – Newton’s laws of motion	Ethics – production and use of dangerous radioactive material			
	Safeguarding						

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y12	Topic title	Cell structure water, carbohydrates and lipids proteins and nucleic acids	Enzymes biological membranes cell division exchange surfaces	Transport and plants Diseases of animals and plants disease prevention biodiversity	maintaining biodiversity classification Evolution	Revision and preparation for AS	Ecosystems, populations and sustainability
	Building on Key Stage 4 (Skills and content)	Continue to explore the key ideas of cells and atoms, as we start to consider the basic biochemistry of life. We also focus on interdependence, with a particular focus on the responsibilities of humans.					
	Intent	Provide students with a solid understanding of the ultrastructure of cells, both eukaryote and prokaryote. Introduce basic biochemistry.	Use the basic biochemistry from term 1 to study how it integrates into a biological systems and processes.	Study the integrated circulatory and respiratory systems. Expand on previous GCSE knowledge of responses to pathogens. Introduce the responses of plants to pathogens.	Expand further on the KS4 knowledge of evolution by natural selection. Consider the work of Taxonomists in classifying the living world and develop an understanding of phylogeny.		Consider the impacts of a growing human population on the Earth's resources and the responsibility for humans to use the Earth in a sustainable way.
	Knowledge Skills Understanding	Cell Structure Microscopy Magnification Ultrastructure Prokaryotes vs Eukaryotes The properties of water Monomers and Polymers Simple carbohydrates Polysaccharides Lipids Amino acids and peptides Levels of protein structure Globular and fibrous proteins Inorganic ions Testing for Biological molecules Nucleotides Nucleic acids	Cell cycle and mitosis Examination of mitosis Meiosis Differentiation Cell division application Semi conservative replication Transcription and translation Enzyme action Factors affecting enzyme action Interfering with and aiding enzyme action Roles of membranes and the fluid mosaic model Membrane structure and permeability Movement across membranes Osmosis and water potential	Specialised exchange surfaces Ventilation and gaseous exchange in mammals Gaseous exchange in bony fish and insects Circulatory systems Tissue fluid The mammalian heart ECG traces Oxygen transport and dissociation Vascular systems in plants Transpiration Transport of water in the plant Translocation Pathogens and how they spread Primary defences against pathogens The immune response Antibodies, active and passive immunity Vaccination Disease and medicine	Biodiversity and sampling Species richness and evenness Assessing biodiversity Maintaining Biodiversity Conservation efforts Chi squared, spearmans rank, students t test Classification and evolution Classifying species Kingdoms and domains Natural selection and evolution Variation Adaptations Results of natural selection		Ecosystems and energy transfers Nutrient cycles Succession Abundance and distribution organisms Population size and competition Conservation and preservation Sustainable timber production and fishing Conflict between conservation and human needs Managing ecologically sensitive areas
	Knowledge and skills revisited	Knowledge: Cell structure Basic magnification problems	Knowledge: Cell division Lock and key hypothesis	Knowledge: Diffusion and osmosis The role of white blood cells	Knowledge: Classification Natural selection Selective breeding	Knowledge:	Knowledge: Carbon cycle Ecological sampling
		Skills: 1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis	Skills: 1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis	Skills: 1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis	Skills: 1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis	Skills:	Skills: 1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations 2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis

		3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units	3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units	3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units	3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units		3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units	
	Assessment (for learning)	End of unit assessment: Cell structure test	End of unit assessment: Biological molecules test	End of unit assessment: January mock exam Transport across membranes test Disease test	End of unit assessment: Biodiversity, classification and evolution test	End of unit assessment: Summer mock exams or AS depending on route	End of unit assessment: Ecosystems, populations and sustainability test	
		Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	
	Literacy focus	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	
		Other literacy foci: Extended response questions	Other literacy foci: Essay writing Extended response questions	Other literacy foci: Extended response questions	Other literacy foci: Essay writing Presenting to a group Extended response questions	Other literacy foci: Extended response questions	Other literacy foci: Preparing a presentation Extended response questions	
	Numeracy focus	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions 16 Handling data Use an appropriate number of significant figures Find arithmetic means Construct and interpret frequency tables and diagrams, bar charts and histograms Understand simple probability	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions 16 Handling data Use an appropriate number of significant figures Find arithmetic means Construct and interpret frequency tables and diagrams, bar charts and histograms Understand simple probability	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions 16 Handling data Use an appropriate number of significant figures Find arithmetic means Construct and interpret frequency tables and diagrams, bar charts and histograms Understand simple probability	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions 16 Handling data Use an appropriate number of significant figures Find arithmetic means Construct and interpret frequency tables and diagrams, bar charts and histograms Understand simple probability	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions 16 Handling data Use an appropriate number of significant figures Find arithmetic means Construct and interpret frequency tables and diagrams, bar charts and histograms Understand simple probability	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions 16 Handling data Use an appropriate number of significant figures Find arithmetic means Construct and interpret frequency tables and diagrams, bar charts and histograms Understand the principles of sampling as applied to scientific data	

		<p>Understand the principles of sampling as applied to scientific data</p> <p>Understand the terms mean, median and mode</p> <p>Use a scatter diagram to identify a correlation between two variables</p> <p>Make order of magnitude calculations</p> <p>Algebra</p> <p>Understand and use the symbols: =, <, <<, >>, >, α, ~ 37</p> <p>Change the subject of an equation</p> <p>Substitute numerical values into algebraic equations using appropriate units for physical quantities</p> <p>Solve algebraic equations</p> <p>Use logarithms in relation to quantities that range over several orders of magnitude</p> <p>Graphs</p> <p>Translate information between graphical, numerical and algebraic forms</p> <p>Plot two variables from experimental or other data</p> <p>Understand that $y = mx + c$ represents a linear relationship</p> <p>Determine the intercept of a graph</p> <p>Calculate rate of change from a graph showing a linear relationship</p> <p>Geometry and trigonometry</p> <p>Calculate the circumferences, surface areas and volumes of regular shapes</p>	<p>Understand the principles of sampling as applied to scientific data</p> <p>Understand the terms mean, median and mode</p> <p>Use a scatter diagram to identify a correlation between two variables</p> <p>Make order of magnitude calculations</p> <p>Algebra</p> <p>Understand and use the symbols: =, <, <<, >>, >, α, ~ 37</p> <p>Change the subject of an equation</p> <p>Substitute numerical values into algebraic equations using appropriate units for physical quantities</p> <p>Solve algebraic equations</p> <p>Use logarithms in relation to quantities that range over several orders of magnitude</p> <p>Graphs</p> <p>Translate information between graphical, numerical and algebraic forms</p> <p>Plot two variables from experimental or other data</p> <p>Understand that $y = mx + c$ represents a linear relationship</p> <p>Determine the intercept of a graph</p> <p>Calculate rate of change from a graph showing a linear relationship</p> <p>Draw and use the slope of a tangent to a curve as a measure of rate of change</p>	<p>Understand the principles of sampling as applied to scientific data</p> <p>Understand the terms mean, median and mode</p> <p>Use a scatter diagram to identify a correlation between two variables</p> <p>Make order of magnitude calculations</p> <p>Algebra</p> <p>Understand and use the symbols: =, <, <<, >>, >, α, ~ 37</p> <p>Change the subject of an equation</p> <p>Substitute numerical values into algebraic equations using appropriate units for physical quantities</p> <p>Solve algebraic equations</p> <p>Use logarithms in relation to quantities that range over several orders of magnitude</p> <p>Graphs</p> <p>Translate information between graphical, numerical and algebraic forms</p> <p>Plot two variables from experimental or other data</p> <p>Understand that $y = mx + c$ represents a linear relationship</p> <p>Determine the intercept of a graph</p> <p>Calculate rate of change from a graph showing a linear relationship</p> <p>Draw and use the slope of a tangent to a curve as a measure of rate of change</p> <p>Calculate the circumferences, surface areas and volumes of regular shapes</p>	<p>Understand the principles of sampling as applied to scientific data</p> <p>Understand the terms mean, median and mode</p> <p>Use a scatter diagram to identify a correlation between two variables</p> <p>Make order of magnitude calculations</p> <p>Select and use a statistical test</p> <p>Understand measures of dispersion, including standard deviation and range</p> <p>Identify uncertainties in measurements and use simple techniques to determine uncertainty when data are combined</p> <p>Algebra</p> <p>Understand and use the symbols: =, <, <<, >>, >, α, ~ 37</p> <p>Change the subject of an equation</p> <p>Substitute numerical values into algebraic equations using appropriate units for physical quantities</p> <p>Solve algebraic equations</p> <p>Use logarithms in relation to quantities that range over several orders of magnitude</p> <p>Graphs</p> <p>Translate information between graphical, numerical and algebraic forms</p> <p>Plot two variables from experimental or other data</p> <p>Understand that $y = mx + c$ represents a linear relationship</p> <p>Determine the intercept of a graph</p> <p>Calculate rate of change from a graph showing a linear relationship</p> <p>Draw and use the slope of a tangent to a curve as a measure of rate of change</p>	<p>Understand the principles of sampling as applied to scientific data</p> <p>Understand the terms mean, median and mode</p> <p>Use a scatter diagram to identify a correlation between two variables</p> <p>Make order of magnitude calculations</p> <p>Select and use a statistical test</p> <p>Understand measures of dispersion, including standard deviation and range</p> <p>Identify uncertainties in measurements and use simple techniques to determine uncertainty when data are combined</p> <p>Algebra</p> <p>Understand and use the symbols: =, <, <<, >>, >, α, ~ 37</p> <p>Change the subject of an equation</p> <p>Substitute numerical values into algebraic equations using appropriate units for physical quantities</p> <p>Solve algebraic equations</p> <p>Use logarithms in relation to quantities that range over several orders of magnitude</p> <p>Graphs</p> <p>Translate information between graphical, numerical and algebraic forms</p> <p>Plot two variables from experimental or other data</p> <p>Understand that $y = mx + c$ represents a linear relationship</p> <p>Determine the intercept of a graph</p> <p>Calculate rate of change from a graph showing a linear relationship</p> <p>Draw and use the slope of a tangent to a curve as a measure of rate of change</p>	<p>Understand the terms mean, median and mode</p> <p>Use a scatter diagram to identify a correlation between two variables</p> <p>Make order of magnitude calculations</p> <p>Understand and use the symbols: =, <, <<, >>, >, α, ~ 37</p> <p>Change the subject of an equation</p> <p>Substitute numerical values into algebraic equations using appropriate units for physical quantities</p> <p>Graphs</p> <p>Translate information between graphical, numerical and algebraic forms</p>	
	SMSC / British Values		Spiritual the genetic basis of life	Moral and ethical concerns regarding vaccination programmes.	Spiritual, the conflict between world religion and evolution.		Social/moral the responsibility to use the Earths resources sustainably	
	Safeguarding							

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y13	Topic title	Photosynthesis, homeostasis	Respiration, Communication	Cellular control	Biotechnology	Revision	
	Building on Key Stage 4 and Year 12 (Skills and content)	We continue to build upon the key ideas, we also consider energy in Y13 and we integrate the concepts of cells and atoms within the life processes.					
	Intent	Students gain an understanding of photosynthesis as a biochemical process, and consider how conditions can be manipulated in agricultural settings. An integrated look at the organs of the excretory system, including the medical interventions in kidney failure.	Students gain an understanding of respiration as a biochemical process. A deeper understanding of the communication systems within the body, including the interrelationships between the nervous and hormonal systems.	A deeper discussion of the role of DNA in life on Earth, from the control of characteristics within individuals to evolution and natural selection.	Students experience the techniques that will drive the future study of Biology and medicine.	Revise the two year A level course, providing multiple opportunities to practise the application of knowledge.	
	Knowledge Skills Understanding	Chloroplasts and photosynthetic pigments Thin layer chromatography Light dependent stage Calvin cycle Factors affecting the rate of photosynthesis The need for communication Thermoregulation Excretion and liver structure Kidney structure Kidney function Osmoregulation Kidney failure and treatment Urine analysis	Need for respiration and the mitochondria Glycolysis Link reaction and krebs cycle Oxidative phosphorylation Anaerobic respiration Respiratory substrates Factors affecting rate of respiration Structures of neurones Resting, generator and action potentials Salutatory conduction Synapses Endocrine glands Pancreas histology Glucose homeostasis Diabetes mellitus Plant tropisms Auxins and gibberelins Commercial uses of plant hormones Organisation of the mammalian nervous system The brain Reflexes and fight or flight Control of heart rate Muscle contraction	Transcription and translation Mutations Control of gene expression Lac operon Homeobox gene sequences Apoptosis Variaiton Inheritance and epistasis Chi squared Genetic basis or variation Hardy-Weinberg principle Speciation Artificial selection	PCR and electrophoresis Genome sequencing Uses of genome sequencing Genetic engineering GM ethics Gene therapy Cloning plants Cloning animals Microorganisms in biotechnology Immobilised enzymes		
	Knowledge and skills revisited	Knowledge: Photosynthesis Plant cell structure Leaf structure	Knowledge: Respiration Eukaryotic cell structure Nervous and hormonal systems	Knowledge: Monohybrid inheritance Selective breeding	Knowledge: Genetic engineering Cloning enzmes	Knowledge:	Knowledge:
Skills: 1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations		Skills: 1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations	Skills: 1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations	Skills: 1.1 – Developing theories 1.2 – Using models 1.3 – Using evidence and ethics 1.4 – Applications and Implications 1.5 – Risks and perceptions 2.1 – Producing a hypotheses 2.2 – Plan an Experiment 2.3 – Selecting equipment 2.4 – working safely in a lab 2.5 – Appropriate sampling 2.6 – Record observations	Skills:	Skills:	

		2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units	2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units	2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units	2.7 – Evaluate methods 3.1 – Presenting data in tables/charts 3.2 – Translating data 3.3 – Mathematical analysis 3.4 – Uncertainty 3.5 - Conclusion 3.6 – Explain hypothesis 3.7 – Evaluate data All 4 – Vocab, quantities, units		
	Assessment (for learning)	End of unit assessment: Photosynthesis test, Homeostasis test	End of unit assessment: Respiration test, Communication test	End of unit assessment: Mock exam Cellular control test	End of unit assessment: Biotechnology test	End of unit assessment: MOCK exams	End of unit assessment: Final summative assessment
		Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment: Weekly exam question homework Seneca learning Textbook questions Practical write ups	Cumulative assessment:
	Literacy focus	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words: Name Identify Describe Explain Calculate Suggest Conclude Discuss Estimate Evaluate Compare Determine	Command words:
		Other literacy foci:	Other literacy foci:	Other literacy foci: Presentation	Other literacy foci: Golden rice essay	Other literacy foci:	Other literacy foci:
	Numeracy focus	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions Handling data Use an appropriate number of significant figures Find arithmetic means Understand the terms mean, median and mode Use a scatter diagram to identify a correlation between two variables	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions Handling data Use an appropriate number of significant figures Find arithmetic means Understand the terms mean, median and mode Use a scatter diagram to identify a correlation between two variables	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions Handling data Use an appropriate number of significant figures Find arithmetic means Construct and interpret frequency tables and diagrams, bar charts and histograms	Use an appropriate number of significant figures Find arithmetic means Construct and interpret frequency tables and diagrams, bar charts and histograms Understand simple probability Understand the principles of sampling as applied to scientific data Understand the terms mean, median and mode Use a scatter diagram to identify a correlation between two variables Make order of magnitude calculations Select and use a statistical test	Recognise and make use of appropriate units in calculations Recognise and use expressions in decimal and standard form Use ratios, fractions and percentages Estimate Results Use calculators to find and use power, exponential and logarithm functions Handling data Use an appropriate number of significant figures Find arithmetic means Construct and interpret frequency tables and diagrams, bar charts and histograms	

		<p>Make order of magnitude calculations</p> <p>Select and use a statistical test</p> <p>Understand measures of dispersion, including standard deviation and range</p> <p>Identify uncertainties in measurements and use simple techniques to determine uncertainty when data are combined</p> <p>Translate information between graphical, numerical and algebraic forms</p> <p>Plot two variables from experimental or other data</p> <p>Understand that $y = mx + c$ represents a linear relationship</p> <p>Determine the intercept of a graph</p> <p>Calculate rate of change from a graph showing a linear relationship</p> <p>Draw and use the slope of a tangent to a curve as a measure of rate of change</p>	<p>Make order of magnitude calculations</p> <p>Select and use a statistical test</p> <p>Understand measures of dispersion, including standard deviation and range</p> <p>Identify uncertainties in measurements and use simple techniques to determine uncertainty when data are combined</p> <p>Use logarithms in relation to quantities that range over several orders of magnitude</p> <p>Graphs</p> <p>Translate information between graphical, numerical and algebraic forms</p> <p>Plot two variables from experimental or other data</p> <p>Understand that $y = mx + c$ represents a linear relationship</p> <p>Determine the intercept of a graph</p> <p>Calculate rate of change from a graph showing a linear relationship</p> <p>Draw and use the slope of a tangent to a curve as a measure of rate of change</p>	<p>Understand simple probability</p> <p>Understand the principles of sampling as applied to scientific data</p> <p>Understand the terms mean, median and mode</p>	<p>Understand measures of dispersion, including standard deviation and range</p> <p>Identify uncertainties in measurements and use simple techniques to determine uncertainty when data are combined</p> <p>Algebra</p> <p>Translate information between graphical, numerical and algebraic forms</p> <p>Plot two variables from experimental or other data</p> <p>Understand that $y = mx + c$ represents a linear relationship</p> <p>Determine the intercept of a graph</p> <p>Calculate rate of change from a graph showing a linear relationship</p> <p>Draw and use the slope of a tangent to a curve as a measure of rate of change</p>	<p>Understand simple probability</p> <p>Understand the principles of sampling as applied to scientific data</p> <p>Understand the terms mean, median and mode</p> <p>Use a scatter diagram to identify a correlation between two variables</p> <p>Make order of magnitude calculations</p> <p>Select and use a statistical test</p> <p>Understand measures of dispersion, including standard deviation and range</p> <p>Identify uncertainties in measurements and use simple techniques to determine uncertainty when data are combined</p> <p>Algebra</p> <p>Understand and use the symbols: $=, <, <<, >>, >, \alpha, \sim$ 37</p> <p>Change the subject of an equation</p> <p>Substitute numerical values into algebraic equations using appropriate units for physical quantities</p> <p>Solve algebraic equations</p> <p>Use logarithms in relation to quantities that range over several orders of magnitude</p> <p>Graphs</p> <p>Translate information between graphical, numerical and algebraic forms</p> <p>Plot two variables from experimental or other data</p> <p>Understand that $y = mx + c$ represents a linear relationship</p> <p>Determine the intercept of a graph</p> <p>Calculate rate of change from a graph showing a linear relationship</p> <p>Draw and use the slope of a tangent to a curve as a measure of rate of change</p>	
	<p>SMSC / British Values</p>	<p>Social, moral and cultural – drug testing in sport</p> <p>The use of pregnancy tests</p> <p>Kidney transplants</p>	<p>Social, moral the implications of mitochondrial transplants and 3 parent babies</p> <p>Spiritual, the brain</p>	<p>DNA as the basis of all life and the biochemical evidence for evolution</p>	<p>Forensics, paternity testing, cloning and IVF</p> <p>Future developments to include synthetic biology.</p>		

	Safeguarding						
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		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y12 Chemistry	Topic title	GCSE Recap(2020 only) Atoms Moles Basic Organic Alkanes	Acids Salts Oxidation Alkenes Polymers	Electrons Bonding Shapes Intermolecular forces Alcohols Haloalkanes	Periodic table Testing for Ions Enthalpy Rates Equilibria IR/MS Combined techniques	Revision and Past papers	Rates (Yr 13)
	Building on Key Stage 4 (Skills and content)	The GCSE Idea of “Atoms” is extensively developed throughout the 2 years. The topics from GCSE are built upon in the themes of “Organic Chemistry” and Inorganic and “Physical Chemistry”					
	Intent	The intent is for the students to be prepared for the next stage in the educational journey by delivering the concepts of A Level Chemistry in a way that develops the skills and knowledge they achieved at GCSE within the key themes of “Organic Chemistry” and “Inorganic and Physical Chemistry”.					
	Knowledge Skills Understanding	Knowledge and Understanding Atoms Atoms Masses Moles Moles % Yield/atom economy Basic Organic Nomenclature etc Structures Isomers Alkanes Properties and rxns Skills PAG 1 AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW7 Developing ideas over time HSW8 Appropriate terminology HSW9 Risks and benefits	Knowledge and Understanding Acids Rxns Salts Titrations Salts Formation Water of crystallisation Oxidation No Working out Redox rxns Alkenes Structure Isomers Addition rxn Polymerisation Properties Polymers Formation Waste Skills PAG 2 AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW8 Appropriate terminology HSW9 Risks and benefits HSW10 Ethical issues	Knowledge and Understanding Electrons Shells and orbitals Bonding Ionic Covalent Dative Shapes Intermolecular forces Alcohols Properties Reactions Haloalkanes Properties Reactions Environmental impact Skills PAG 5 AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW8 Appropriate terminology HSW9 Risks and benefits HSW10 Ethical issues HSW11 Role in validating new knowledge HSW12 Evaluating societal scientific decision making	Knowledge and Understanding Periodic table Development Modern Electrons Ionisation energies Grp 2 Grp 17 Testing for Ions Enthalpy Rxns Profiles Calorimetry Bond energies Hess Rates Collision theory Catalysts Boltzmann Equilibria Industry Kc IR/MS IR spec IR-functional grps MS in org chem MS- frag Combined techniques Skills PAG 3, 4 AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories,models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW7 Developing ideas over time HSW8 Appropriate terminology HSW9 Risks and benefits	Knowledge and Understanding No new knowledge in this term-consolidation and preparation of any candidates for AS exam Skills Exam technique AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW7 Developing ideas over time HSW8 Appropriate terminology HSW9 Risks and benefits HSW10 Ethical issues HSW11 Role in validating new knowledge HSW12 Evaluating societal scientific decision making	Knowledge and Understanding Module 5 Rates Content – dependent on other commitments of students, will be completed/consolidated in yr 13 Skills PAG 9 AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW8 Appropriate terminology HSW9 Risks and benefits

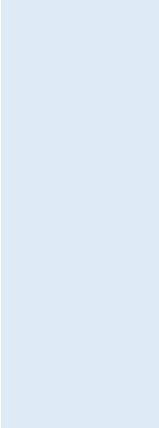
[illegible]

	Numeracy focus	M0 Computation M1 Handling Data M2 Algebra	M0 Computation M1 Handling Data M2 Algebra M4 Geometry and Trigonometry	M0 Computation M1 handling Data M2 Algebra M4 Geometry and Trigonometry	M0 Computation M1 handling Data M2 Algebra M3 Graphs	M0 Computation M1 handling Data M2 Algebra M3 Graphs M4 Geometry and Trigonometry	M0 Computation M1 handling Data M2 Algebra M3 Graphs M4 Geometry and Trigonometry
	SMSC / British Values	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and evaluate their associated benefits and risks	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and evaluate their associated benefits and risks	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and evaluate their associated benefits and risks HSW10 Consider ethical issues in the treatment of humans, other organisms and the environment HSW11 Evaluate the role of the scientific community in validating new knowledge and ensuring integrity HSW12 Evaluate the ways in which society uses science to inform decision making.	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and evaluate their associated benefits and risks	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and evaluate their associated benefits and risks HSW10 Consider ethical issues in the treatment of humans, other organisms and the environment HSW11 Evaluate the role of the scientific community in validating new knowledge and ensuring integrity HSW12 Evaluate the ways in which society uses science to inform decision making.	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and evaluate their associated benefits and risks
	Safeguarding						

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y13 Chemistry	Topic title	Rates Equilibria Aromatics	Acids Enthalpy Entropy Carbonyls	Redox Cells N Cpds Synthesis	Transition metals Organic Analysis	Revision/past papers	XXXXXXXXXXXXXXXXXXXXXXX
	Building on Key Stage 4 and Year 12 (Skills and content)	The GCSE Idea of “Atoms” is extensively developed throughout the 2 years. The topics from Year 12 are built upon in the themes of “Organic Chemistry” and Inorganic and “Physical Chemistry”					
	Intent	The intent is for the students to be prepared for the next stage in the educational journey by delivering the concepts of A Level Chemistry in a way that develops the skills and knowledge they achieved at GCSE within the key themes of “Organic Chemistry” and “Inorganic and Physical Chemistry”.					XXXXXXXXXXXXXXXXXXXXXXX
	Knowledge Skills Understanding	Knowledge and Understanding Rates Rate eqn Orders Graphs RDs Mechanisms Arrhenius Equilibria Kc Kp Significance of constants Aromatics Benzene Naming Ephil subst Halogenation Phenols Skills PAG 6, 9, 10 AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW7 Developing ideas over time HSW8 Appropriate terminology HSW9 Risks and benefits	Knowledge and Understanding Acids Bronsted-Lowry Acid-base rxns Ka pH of strong pH of weak Kw Buffers Titration curves Indicators Enthalpy Lattice enth Born-Haber Enth of hyd and soln Entropy Entropy Free energy Carbonyls Rxns Tests C Acids Esters Acyl chlorides Skills AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW8 Appropriate terminology HSW9 Risks and benefits	Knowledge and Understanding Redox Eqns Titrations Cells Std electrode pots Std cell pots N Cpds Amines Amino acids Amides Polymers Condensation Hydrolysis Extending chain length Nitriles Synthesis Practical skills Routes Skills PAG 8, 11 AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW8 Appropriate terminology HSW9 Risks and benefits HSW10 Ethical issues	Knowledge and Understanding Transition metals TMs Cpds Complex ions Stereoisomerism Ligand subst Pptn rxns Redox rxns Testing for ions Organic Analysis Chromatography Testing for functional groups NMR C NMR Proton NMR OH and NH Combined techs Skills PAG 12 AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW8 Appropriate terminology HSW9 Risks and benefits	Knowledge and Understanding No new knowledge taught-syllabus covered. Skills AO1 Demonstrate knowledge procedures. AO2 Apply AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW7 Developing ideas over time HSW8 Appropriate terminology HSW9 Risks and benefits HSW10 Ethical issues HSW11 Role in validating new knowledge HSW12 Evaluating societal scientific decision making	XXXXXXXXXXXXXXXXXXXXXXX
	Knowledge and skills revisited	Knowledge: All of year 1- 2 AS papers per week	Knowledge: All of year 1- 2 AS papers per week	Knowledge: All of year 1- 2 AS papers per week	Knowledge: All of year 1- 2 AS papers per week	Knowledge: All of year 1- 2 AS papers per week	Knowledge: XXXXXXXXXXXXXXXXXXXXXXX
		Skills AO1 Demonstrate knowledge procedures. AO2 Apply	Skills AO1 Demonstrate knowledge procedures. AO2 Apply	Skills AO1 Demonstrate knowledge procedures. AO2 Apply	Skills AO1 Demonstrate knowledge procedures. AO2 Apply	Skills AO1 Demonstrate knowledge procedures. AO2 Apply	Skills: XXXXXXXXXXXXXXXXXXXXXXX

		AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW7 Developing ideas over time HSW8 Appropriate terminology HSW9 Risks and benefits	AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW8 Appropriate terminology HSW9 Risks and benefits	AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW8 Appropriate terminology HSW9 Risks and benefits HSW10 Ethical issues	AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW8 Appropriate terminology HSW9 Risks and benefits	AO3 Analyse, interpret and evaluate HSW1 Theories, models and ideas HSW2 Knowledge and understanding HSW3 Methodology HSW4 Experiments HSW5 Analyse and interpret HSW6 Evaluate HSW7 Developing ideas over time HSW8 Appropriate terminology HSW9 Risks and benefits HSW10 Ethical issues HSW11 Role in validating new knowledge HSW12 Evaluating societal scientific decision making	
	Assessment (for learning)	End of unit assessment: September AS Exam October Test	End of unit assessment: November Test December Test	End of unit assessment: January Mocks (2) February Test	End of unit assessment: March Test	End of unit assessment: Mocks (3)	End of unit assessment: XXXXXXXXXXXXXXXXXXXXXXX
		Cumulative assessment: 2 AS papers per week Elements of all topic taught in each test	Cumulative assessment: 2 AS papers per week Elements of all topic taught in each test	Cumulative assessment: 2 A level Papers per week Elements of all topic taught in each test	Cumulative assessment: 2 A level Papers per week Elements of all topic taught in each test	Cumulative assessment: 2 A level Papers per week Elements of all topic taught in each test	Cumulative assessment: XXXXXXXXXXXXXXXXXXXXXXX
	Literacy focus	Command words: Give State Identify Describe Explain Calculate Suggest Compare Determine Draw Label Name Plot Predict Show Sketch	Command words: Give State Identify Describe Explain Calculate Suggest Compare Determine Draw Label Name Plot Predict Show Sketch	Command words: Give State Identify Describe Explain Calculate Suggest Compare Determine Draw Label Name Plot Predict Show Sketch	Command words: Give State Identify Describe Explain Calculate Suggest Compare Determine Draw Label Name Plot Predict Show Sketch	Command words: Give State Identify Describe Explain Calculate Suggest Compare Determine Draw Label Name Plot Predict Show Sketch	Command words: XXXXXXXXXXXXXXXXXXXXXXX
		Other literacy foci: Use of correct vocabulary Learning of verbatim definitions Writing concise explanations Writing scientific methods	Other literacy foci: Use of correct vocabulary Learning of verbatim definitions Writing concise explanations Writing scientific methods	Other literacy foci: Use of correct vocabulary Learning of verbatim definitions Writing concise explanations Writing scientific methods	Other literacy foci: Use of correct vocabulary Learning of verbatim definitions Writing concise explanations Writing scientific methods	Other literacy foci: Use of correct vocabulary Learning of verbatim definitions Writing concise explanations Writing scientific methods	Other literacy foci: XXXXXXXXXXXXXXXXXXXXXXX
	Numeracy focus	M0 Computation M1 handling Data M2 Algebra M3 Graphs M4 Geometry and Trigonometry	M0 Computation M1 handling Data M2 Algebra M3 Graphs M4 Geometry and Trigonometry	M0 Computation M1 handling Data M2 Algebra M4 Geometry and Trigonometry	M0 Computation M1 handling Data M2 Algebra M4 Geometry and Trigonometry	M0 Computation M1 handling Data M2 Algebra M3 Graphs M4 Geometry and Trigonometry	XXXXXXXXXXXXXXXXXXXXXXX
	SMSC / British Values	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and	HSW8 Communicate information and ideas in appropriate ways using appropriate terminology HSW9 Consider applications and implications of science and	XXXXXXXXXXXXXXXXXXXXXXX

		evaluate their associated benefits and risks	evaluate their associated benefits and risks	evaluate their associated benefits and risks HSW10 Consider ethical issues in the treatment of humans, other organisms and the environment	evaluate their associated benefits and risks	evaluate their associated benefits and risks HSW10 Consider ethical issues in the treatment of humans, other organisms and the environment HSW11 Evaluate the role of the scientific community in validating new knowledge and ensuring integrity HSW12 Evaluate the ways in which society uses science to inform decision making.	
	Safeguarding						XXXXXXXXXXXXXXXXXXXXXXXXXX



		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y12 Physics	Topic title	Foundations of Physics	Forces and Motion	Electrical Charge	Waves	Quantum	Circular Motion
	Building on Key Stage 4 (Skills and content)	Forces topic (moments, pressure in liquids – taught in triple only) Electricity (static and charge – taught in triple only) Waves (
	Intent	Students are now building further on the ‘big idea’ of forces in Physics. New areas of study look at projectiles, moments and Archimedes principle. Linking these together in the real world. Experimental skills using uncertainties are developed in this unit, allowing students the limit in experimental error.	Student continue to study forces, linking these to energy and collisions, giving students an understanding of design safety in vehicles. Experimental skills are further developed using practical work.	Students are now building further on the electricity topic from GCSE. Linking the movement of charge to the resistance in a material. Experimental skills are further developed using practical work.	Students continue to build on the electricity topic, looking at the practical uses of potential dividers. Waves is also introduced, adding the finer detail for wave forms and EM spectrum taken from the GCSE course. Experimental work continues to be a focus with several PAGs.	Students continue to study waves, and quantum is introduced. Linking the idea of wave/particle duality. Experimental work is still a focus throughout these units.	Students are starting the new Y13 topics. Several lessons will be used to revise Y12 subject content, with mocks used to give students indication of current working level using real exams. Students are introduced to circular motion, which links to the previous forces topic and introduces the student to radians, plus thermal physics.
	Knowledge Skills Understanding	Module 2: Foundations of physics 2.1.1 Physical quantities 2.1.2 S.I. units 2.2.1 Measurements and uncertainties 2.3.1 Scalars and vectors Module 2 HSW5 - Analyse and interpret data HSW8 - using appropriate terminology Module 3: Forces and Motion 3.1 Motion 3.1.1 Kinematics 3.1.2 Linear motion PAG1 3.1.3 Projectile motion 3.2 Forces in Action 3.2.1 Dynamics 3.2.2 Motion with non-uniform acceleration PAG1 3.2.3 Equilibrium 3.2.4 Density and pressure Module 3 HSW HSW1 - Use theories, models and ideas HSW2 - pose scientific questions HSW3 - appropriate methodology HSW4 - experimental and investigative activities HSW5 -Analyse and interpret data HSW6 - Evaluate methodology, evidence and data, HSW7 - Know that scientific understanding develops over time HSW9 - applications of science HSW10 - ethical issues HSW11 - scientific community in validating new knowledge HSW12 - ways in which society uses science to inform decision making	Module 3: Forces and Motion cont. 3.3 Work, Energy and Power 3.3.1 Work and conservation of energy 3.3.2 Kinetic and potential energies 3.3.3 Power 3.4 Materials 3.4.1 Springs PAG2 3.4.2 Mechanical properties of matter PAG2 3.5 Newton’s Laws and momentum 3.5.1 Newton’s laws of motion 3.5.2 Collisions Module 3 HSW HSW1 - Use theories, models and ideas HSW2 - pose scientific questions HSW3 - appropriate methodology HSW4 - experimental and investigative activities HSW5 -Analyse and interpret data HSW6 - Evaluate methodology, evidence and data, HSW7 - Know that scientific understanding develops over time HSW9 - applications of science HSW10 - ethical issues HSW11 - scientific community in validating new knowledge HSW12 - ways in which society uses science to inform decision making	Module 4: Electrons, waves and photons 4.1 Charge and current 4.1.1 Charge 4.1.2 Mean drift velocity 4.2 Energy, power and resistance 4.2.1 Circuit Symbols 4.2.2 E.m.f and p.d 4.2.3 Resistance PAG3 4.2.4 Resistivity PAG3 4.2.5 Power Module 4 HSW HSW1 - Use theories, models and ideas HSW2 - pose scientific questions HSW3 - appropriate methodology HSW4 - experimental and investigative activities HSW5 - Analyse and interpret data HSW7 - Know that scientific understanding develops over time HSW8 - using appropriate terminology HSW9 - applications of science HSW10 - ethical issues HSW12 - ways in which society uses science to inform decision making	Module 4 cont. 4.3 Electrical Circuits 4.3.1 Series and Parallel circuits 4.3.2 Internal resistance PAG4 4.3.3 Potential Dividers PAG4 4.4 Waves 4.4.1 Wave Motion PAG5 4.4.2 Electromagnetic Spectrum Module 4 cont. HSW HSW1 - Use theories, models and ideas HSW4 - experimental and investigative activities HSW5 - Analyse and interpret data HSW6 - Evaluate methodology, evidence and data, HSW7 - Know that scientific understanding develops over time HSW8 - using appropriate terminology HSW9 - applications of science HSW12 - ways in which society uses science to inform decision making	Module 4 cont. 4.4 Waves cont. 4.4.3 Superposition PAG5 4.4.4 Stationary waves PAG5 4.5 Quantum Physics 4.5.1 Photons PAG6 4.5.2 The photoelectric effect 4.5.3 Wave-particle duality Module 4 cont. HSW HSW1 - Use theories, models and ideas HSW2 - pose scientific questions HSW3 - appropriate methodology HSW7 - Know that scientific understanding develops over time HSW11 - scientific community in validating new knowledge	Module 5 5.1 Thermal Physics 5.1.1 Temperature 5.1.2 Solids, liquids and gases 5.2 Circular Motion 5.2.1 Kinematics of circular motion 5.2.2 Centripetal force Module 5 HSW1 - Use theories, models and ideas HSW2 - pose scientific questions HSW5 - Analyse and interpret data HSW7 - Know that scientific understanding develops over time HSW9 - applications of science
	Knowledge and skills revisited	Knowledge:	Knowledge: Foundations in Physics Forces in Action	Knowledge: Foundations in Physics Forces in Action Work energy and power Newton’s Laws and momentum	Knowledge: Work energy and power Newton’s Laws and momentum Charge and Current Energy, Power and resistance	Knowledge: Charge and Current Energy, Power and resistance Electrical Circuits	Knowledge: Electrical Circuits Waves Quantum

		Skills:	Skills: HSW1, HSW2, HSW3, HSW4, HSW5, HSW6, HSW7, HSW9, HSW10, HSW11, HSW12.	Skills: HSW1, HSW2, HSW3, HSW4, HSW5, HSW7, HSW9, HSW10, HSW11, HSW12.	Skills: HSW1, HSW4, HSW5, HSW7, HSW8, HSW9, HSW12.	Skills: HSW2, HSW3, HSW7, HSW11.	Skills:
Assessment (for learning)		End of unit assessment: PAG1.1 Comparing methods of determining g PAG 1.2 Investigating terminal velocity PAG 1.3 Investigating the effect of initial speed on stopping distance Foundations in Physics module test Motion module test Forces in Action module test	End of unit assessment: PAG2.1 Determining the Young Modulus for a metal PAG2.2 Force/extension characteristics for arrangements of springs PAG 2.3 Investigating a property of plastic Work, Energy and Power module test Newton’s Laws and momentum topic test	End of unit assessment: PAG3.1 Determining the resistivity of a metal PAG 3.2 Investigating electrical characteristics PAG3.3 Determining the internal resistance and maximum power available from a cell Charge and current module test Energy, Power and resistance module test	End of unit assessment: PAG4.1 Investigating resistance PAG4.2 Investigating circuits with more than one source of e.m.f. PAG4.3 Investigating potential divider circuits including a non-ohmic device PAG 5.1 Determining the wavelength of light with a diffraction grating Electrical circuits module test	End of unit assessment: PAG5.2 Determining the speed of sound in air using a resonance tube PAG5.3 Determining frequency and amplitude of a wave using an oscilloscope PAG 6.1 Determining the Planck constant PAG6.2 Experiments with light PAG6.3 Experiments with polarisation Waves module test Quantum module test	End of unit assessment: Circular motion module test
		Cumulative assessment:	Cumulative assessment: Foundations in Physics multiple choice test bank 1 Forces in Action multiple choice test bank 1	Cumulative assessment: Jan Mock Work energy and power multiple choice test bank 1 Newton’s Laws and momentum multiple choice test bank 1 Foundations in Physics multiple choice test bank 2 Forces in action multiple choice test bank 2	Cumulative assessment: Charge and current multiple choice test bank 1 Energy, Power and resistance multiple choice test bank 1 Work energy and power multiple choice test bank 2 Newton’s Laws and momentum multiple choice test bank 2	Cumulative assessment: Electrical Circuits multiple choice test bank 1 Charge and current multiple choice test bank 2 Energy, Power and resistance multiple choice test bank 2	Cumulative assessment: Waves multiple choice test bank 1 Quantum multiple choice test bank 1 Electrical Circuits multiple choice test bank 2 Year 1 paper mock Summer work: Breadth and Depth practice paper 1&2, Breadth and Depth 2016 Breadth and Depth 2017
	Literacy focus	Command words: Calculate Compare Complete Describe Discuss Draw Estimate Explain Evaluate Justify Label Measure Name Outline Plot Predict Show Sketch Suggest	Command words: Calculate Compare Complete Describe Discuss Draw Estimate Explain Evaluate Justify Label Measure Name Outline Plot Predict Show Sketch Suggest	Command words: Calculate Compare Complete Describe Discuss Draw Explain Evaluate Justify Label Measure Name Outline Plot Predict Show Sketch Suggest	Command words: Calculate Compare Complete Describe Discuss Explain Evaluate Justify Label Measure Name Outline Plot Predict Show Sketch Suggest	Command words: Calculate Compare Complete Describe Discuss Explain Evaluate Justify Label Measure Name Outline Plot Predict Show Sketch Suggest	Command words: Calculate Compare Complete Describe Discuss Draw Explain Evaluate Justify Label Measure Name Outline Plot Predict Show Sketch Suggest
		Other literacy foci: Foundations in Physics learning grid Motion Learning Grid Physics fact sheets	Other literacy foci: Work, Energy and Power learning grid Materials learning grid Newton’s Laws and momentum learning grid Physics fact sheets	Other literacy foci: Charge learning grid Energy, power and resistance learning grid Physics fact sheets	Other literacy foci: Electrical Circuits learning grid Physics fact sheets	Other literacy foci: Waves learning grid Quantum learning grid Physics fact sheets	Other literacy foci: Circular Motion Learning grid Physics fact sheets
	Numeracy focus	Module 2 M0.1 – units M0.2 - standard form M0.4 - estimates M0.6 – sin, cos, tan M1.5 - uncertainties	Module 3 cont. M0.2 - standard form M2.1 – using symbols M3.2 – plotting a graph M3.8 – area under a curve M3.9 – using spreadsheets	Module 4 M0.2 - standard form M2.2 – rearranging equations M3.12 Sketch relationships	Module 4 cont. M2.3 - BIDMAS M4.6 – approximations for small angles	Module 4 cont. M2.3 - BIDMAS	Module 5 M2.4 – solving equations M4.7 – converting degrees to radians

		M4.2 – represent 2D and 3D M4.4 - Pythagoras’s theorem M4.5 – problem solving with sin, cos, tan Module 3 M0.1 – units M0.2 standard form M0.3 – ratios, fractions, percentages M0.6 - sin, cos, tan M1.1 – significant figures M1.4 – orders of magnitude M2.1 – using symbols M2.2 – rearranging equations M2.4 – solving equations M3.3 – $y=mx + c$ M3.4 – gradients and intercepts M3.5 – rate of change on a graph M3.6 – using tangents on a graph M3.7 – average vs instantaneous M3.9 - using spreadsheets M4.1 – using angles in 2D and 3D M4.2 – represent 2D and 3D M4.3 – calculate areas M4.4 - Pythagoras’s theorem M4.5 – problem solving with sin, cos, tan	M4.3 – calculate areas				
	SMSC / British Values	Cultural – the international bureau of weight and measurements.	Moral and Social – building flame resistant buildings	Moral – using defibrillators to save lives, should they be more common	Social and Moral - Global energy issues	Social – solar energy transfers using the photon	
	Safeguarding						

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Y13 Physics	Topic title	Newtonian World and astrophysics	Particles and medical Physics	Particles and medical Physics			
	Building on Key Stage 4 and Year 12 (Skills and content)	Stars is studied in the triple course only, some students may need support/further input at the beginning of this unit.					
	Intent	Students continue to study thermal Physics. Building on the ideas of gas laws from GCSE. Experimental work is still a focus throughout these units, new mathematical skills using Logarithmic is introduced.	Students are introduced to stars and cosmology, students are made aware of emerging theories of dark energy and dark matter, but are also given an understanding of the limitations of science in this field. Electricity is also built upon with the use of capacitors and nuclear physics is introduced.	Students are introduced to medical physics and the underling use of physics to develop medical imaging (PET scans). Electricity is developed further.			
	Knowledge Skills Understanding	Module 5 5.1 Thermal Physics cont. 5.1.3 Thermal Properties of Materials 5.1.4 Ideal Gases PAG8 5.3 Oscillations 5.3.1 Simple Harmonic Motion PAG10 5.3.2 Energy of a simple harmonic oscillator 5.3.3 Damping 5.4 Gravitational 5.4.1 Point and spherical masses 5.4.2 Newton’s laws of gravitation 5.4.3 Planetary Motion 5.4.4 Gravitational Potential and Energy Module 6 6.4 Nuclear and particle physics 6.4.1 The nuclear atom Module 5 HSW HSW1 - Use theories, models and ideas HSW2 - pose scientific questions HSW4 - experimental and investigative activities HSW5 -Analyse and interpret data HSW6 - Evaluate methodology, evidence and data HSW8 HSW9 - applications of science HSW12 - ways in which society uses science to inform decision making Module 6 HSW HSW7 - Know that scientific understanding develops over time HSW9 - applications of science	Module 5 cont 5.5 Astrophysics and cosmology 5.5.1 Stars 5.5.2 Electromagnetic Radiation from Stars 5.5.3 Cosmology Module 6 6.4 Particle Physics 6.4.2 Fundamental particles 6.4.3 Radioactivity PAG7 6.4.4 Nuclear fission and fusion 6.1 Capacitors 6.1.1 Capacitors PAG9 6.1.2 Energy 6.1.3 Charging and discharging capacitors PAG9 6.2 Electric Fields 6.2.1 Point and spherical charges 6.2.2 Coulomb’s law Module 5 HSW cont. HSW1 - Use theories, models and ideas HSW2 - pose scientific questions HSW5 -Analyse and interpret data HSW6 - Evaluate methodology, evidence and data HSW7 - Know that scientific understanding develops over time HSW8 HSW9 - applications of science HSW10 - ethical issues HSW11 - scientific community in validating new knowledge HSW12 - ways in which society uses science to inform decision making Module 6 HSW HSW1 - Use theories, models and ideas HSW2 - pose scientific questions HSW3 - appropriate methodology HSW4 - experimental and investigative activities HSW5 -Analyse and interpret data	Module 6 6.2 Electric fields cont. 6.2.3 Uniform electric field 6.2.4 Electric potential and energy 6.3 Electromagnetism 6.3.1 Magnetic fields 6.3.2 Motion of charged particles 6.3.3 Electromagnetism 6.5 Medical imaging 6.5.1 Using X-rays 6.5.2 Diagnostic methods in medicine 6.5.3 Using ultrasound Module 6 HSW HSW1 - Use theories, models and ideas HSW2 - pose scientific questions HSW6 - Evaluate methodology, evidence and data HSW7 - Know that scientific understanding develops over time HSW8 HSW9 - applications of science HSW10 - ethical issues HSW12 - ways in which society uses science to inform decision making			

			HSW9 - applications of science HSW10 - ethical issues HSW12 - ways in which society uses science to inform decision making				
Knowledge and skills revisited	Knowledge: Circular Motion	Knowledge: Thermal Physics Oscillations Gravitational		Knowledge:	Knowledge:	Knowledge:	Knowledge:
	Skills:	Skills: HSW1, HSW2, HSW4, HSW5, HSW6, HSW7, HSW8, HSW9 HSW12		Skills:	Skills:	Skills:	Skills:
Assessment (for learning)	End of unit assessment: Thermal Physics module test Oscillations module test Gravitational module test	End of unit assessment: Stars module test Cosmology module test Particle Physics module test Capacitors module test	End of unit assessment: Electric fields module test Electromagnetism module test Medical Imaging module test	End of unit assessment:	End of unit assessment:	End of unit assessment:	End of unit assessment:
	Cumulative assessment: Circular motion multiple choice test bank 1 Most recent summer Breadth and Depth papers sat as a mock in first week back	Cumulative assessment: Thermal Physics multiple choice test bank 1 Oscillations multiple choice test bank 1 Gravitational multiple choice test bank 1 Once module 5 has been taught then all Modelling papers are available for full use as assessments.	Cumulative assessment: Jan mocks Stars multiple choice test bank 1 Cosmology multiple choice test bank 1 Particle Physics multiple choice test bank 1 Capacitors multiple choice test bank 1 Thermal Physics multiple choice test bank 2 Oscillations multiple choice test bank 2 Gravitational multiple choice test bank 2	Cumulative assessment:	Cumulative assessment:	Cumulative assessment:	Cumulative assessment:
Literacy focus	Command words:	Command words:	Command words:	Command words:	Command words:	Command words:	Command words:
	Other literacy foci: Thermal Physics learning grid Oscillations learning grid Gravitational learning grid	Other literacy foci: Stars learning grid Cosmology learning grid Particle Physics learning grid Capacitors learning grid	Other literacy foci: Electric fields learning grid Electromagnetism learning grid Medical Imaging learning grid	Other literacy foci:	Other literacy foci:	Other literacy foci:	Other literacy foci:
Numeracy focus	M0.4 - estimates M1.4 – orders of magnitude M2.2 – rearranging equations M3.9 - using spreadsheets M3.12 – sketching relationships M4.7 – converting degrees and radians	M0.5 – using a calculator for log/ln/10x M1.3 - probability M2.3 – sub values into equations M2.5 – using logs in context M3.8 – calculate area under a curve M3.9 - using spreadsheets M3.10 – interpreting log plots M3.11 – using log and ln M3.12 – sketching relationships	M0.3 – ratios, fractions, percentages M0.5 – using a calculator for log/ln/10x M3.11 – using log and ln				
SMSC / British Values	Moral – discarded satellites in Earth’s orbit	Spiritual – understanding the fabric of the universe	Social/Moral Issues raised when equipping a hospital with an expensive scanner.				
Safeguarding							