Curriculum Content Map

Subject: Science

Year group: 9

		Tei	rm 1		Term 2				Term 3		
Unit title & description	Energy Transfers	Earth and Space	Breathing and Respiration	Unicellular Organisms	Making materials	Reactivity	Forces and Motion	Force Fields and Electromagnets	Genetics and evolution	Plant Growth	Key Concepts in Biology
Sequencing – Why is this taught and now?	 Link and development of energy topic from year 7. Developing life skills such as energy consumption and bills Understanding personal impact on the world as a whole. 	Link to year 5 NC Science Developing life skills such as appreciating how societal perception can change over time and the reasoning behind this.	Link to year 7 organs, year 8 muscles and builds on KS2 NC of understanding your own body Developing awareness and understanding of own health and fitness	Links to year 7 cells, classification from year 4 NC Developing knowledge of the importance of microorganisms in the natural world and industry Links to year 7 cells, classification from year 4 NC The importance of microorganisms in the natural world and industry	 Links to year 7 mixtures and compounds, year 8 metals, year 5 NC. Developing understanding of properties of materials and linking these to their uses Understand both why we recycle and why some materials can and some can't be recycled 	 Links to year 7 acids and alkalis, year 8 combustion, year 5 NC. Understand importance of metal recycling vs extraction Develop awareness of chemical reactions in everyday life that many may not be aware of 	 Links to year 8 forces, year 5 and 6 NC. Develop understanding construction and preservation of structures Further develop mathematical skills within Science 	 Links to year 8 forces, year 7 electricity, year 4 and 6 NC Develop awareness of health and safety around electrical devices Understanding of how many electrical devices work 	 Links to year 7 and 8 reproduction, year 5 and 6 NC Develop awareness of personal impact on biodiversity and the environment 	 Links to year 8 ecosystems and plants, year 5 NC Develop ideas about where food comes from and factors that can affect this. 	As an introduction to GCSE. It revisits part of the cell and enzymes and expands on this. The unit include 3 core practicals giving intensive practice of writing methods, carrying out experiments and evaluating results.
Knowledge	 Temperature changes Transferring energy Controlling transfers Power and efficiency Paying for energy 	 Changing ideas Seasons Magnetic Earth Gravity in space Beyond the Solar System 	 Aerobic respiration Gas exchange system Getting oxygen Comparing gas exchange Anaerobic respiration 	 Unicellular or multicellular Bacteria Protoctists Decomposers and carbon 	 About Ceramics Polymers Composite materials Problems with materials Recycling materials 	 Types of explosion Reactivity Energy and reactions Displacement Extracting metals 	 Forces and movement Energy for movement Speed Turning forces Ramps and pulleys 	 Force fields Static electricity Current electricity Resistance Electromagnets 	 Environmental variation Inherited variation DNA Genes and extinction Natural selection 	 Reactions in plants Plant adaptations Plant products Growing crops Farming problems 	Microscopes Plant and Animal Cells Specialised Cells Bacteria Enzymes and nutrition Enzymes Action and Activity Transporting Substances: Diffusion, Osmosis and Active Transport
Skills	 Evaluating energy efficient light bulbs Drawing Sankey diagrams 	 Making a scientific argument Drawing magnetic fields 	 Writing word equations Interpreting experimental data Evaluating exchange systems 	 Classification Comparing orders of magnitude Using flow charts to identify organisms Drawing pyramids of biomass Drawing food chains 	 Evaluating properties of materials Selecting the correct material for the use Relating structure to properties Writing word and symbol 	 Identifying physical and chemical changes Writing word and symbol equations Comparing reactivity of metals 	 Drawing graphs Identifying energy transfers Explaining how forces affect the way objects move Considering relative speed 	magnetic fields • Building electrical	 Analysing different scientist's contributions to the discovery of DNA Classification 	,	Extended writing: Explain the importance

Retrieval practice – prior knowledge tests and skills that are revisited	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	 Knowledge tests Quick quizzes DO Now recall tasks 3 part homework
Literacy	 Key vocabulary including use of tier 2 language. Extended answer questions relating to payback time and efficiency for energy saving measures 	 Key vocabulary including use of tier 2 language. Extended answer questions relating to how ideas about the Solar system and Universe have changed over time 	 Key vocabulary including use of tier 2 language. Extended answer questions relating to different types of respiration Showing cause and effect in sentences 	 Key vocabulary including use of tier 2 language. Extended answer questions relating to classification of organisms Using modal verbs to show degrees of creativity 	 Key vocabulary including use of tier 2 language. Extended answer questions relating to uses and recycling Recognising biased language 	 Key vocabulary including use of tier 2 language. Extended answer questions relating to displacement reactions and reactivity Use of passive language to write experimental methods 	 Key vocabulary including use of tier 2 language. Extended answer questions relating to motion-time graphs How writing is suited to purpose 	 Key vocabulary including use of tier 2 language. Extended answer questions relating to electromagnets Writing cohesive text 	 Key vocabulary including use of tier 2 language. Extended answer questions relating to natural selection Making convincing arguments 	 Key vocabulary including use of tier 2 language. Extended answer questions relating to selective breeding Emphasising points clearly 	Transferable skills enable young people to face the demands of further and higher education, as well as the demands of the workplace.
Numeracy X ÷	 Calculating efficiency Accuracy and precision Calculating payback time 	 Calculating weight Making comparisons between gravity on and diameter of different planets 	 Calculating means and ranges Comparing inhaled and exhaled air Analysing graphs of oxygen consumption and pulse rate 	Interpreting growth curves Use and utility of pie charts	Analysing graphs of fossil fuel reserves	Calculating the percentage loss or gain in mass in a reaction	Calculating speed, turning forces, work Drawing and interpreting distance-time graphs	Calculating resistance Rounding numbers: Decimal places and significant figures	 Analysing graphs Probability and Statistics 	Analysing graphs	 Demonstrate an understanding of number, size and scale and the quantitative relationship between units. Plot, draw and interpret appropriate graphs. Translate information between numerical and graphical forms. Calculate arithmetic means. Carry out rate calculations.
Enrichment learning	 Practical opportunities, which includes working in groups Investigation or project work into Living in Extremes – looking at how people live in different climates 	 Practical opportunities, which includes working in groups Investigation or project work into Exploring how ideas about Space have changed over time Life beyond the solar system 	 Practical opportunities, which includes working in groups Investigation or project work into How breathing affects athletic performance Impact of training on the body's sytems 	 Practical opportunities, which includes working in groups Investigation or project work into Links to history – the Black Death: how do we know what caused it? Manufacture of yoghurt and cheese 	 Practical opportunities, which includes working in groups Investigation or project work into Examining materials of the future: carbon nanotubes, aerogels Exploring unforeseen problems 	 Practical opportunities, which includes working in groups Investigation or project work into Controlled explosions: safety implications Effects of uncontrolled explosions 	 Practical opportunities, which includes working in groups Investigation or project work into How Stonehenge was built Explaining which transport ideas did not last 	project work into Mission to Mars		 Practical opportunities, which includes working in groups Investigation or project work into The Economics of Organic Farming Problems of farming Comparing organic and 	 Practical opportunities, which includes working in groups Critical thinking – definitions of critical thinking are broad and usually involve general cognitive skills such as analysing, synthesising

	How our energy use affects our planet	 Should we be spending our money studying space? 			caused by materials Exploring problems of making and using materials	 Conditions for rusting: moon v mars Use of sacrificial anodes Should explosives be banned 				intensive farming	and reasoning skills.
British values	Respect for others during group work Environmental concerns including carbon emissions and efficiency	 Respect for others during group work Respect different views on the Universe 	 Respect for others during group work Health issues relating to the respiratory system including: smoking, asthma, emphysema 	Respect for others during group work Respect the importance of biodiversity and food waste recycling.	 Respect for others during group work Understanding of relationship between the changes in the law and waste Peer Review: How are scientific discoveries checked 	Respect for others during group work Lifecycle assessments of heavy metal extraction and disposal	 Respect for others during group work Knowledge of road laws and reasoning behind them. 	 Respect for others during group work Sorting recycling, electrical safety 	 Respect for others during group work Preserving biodiversity, inherited diseases and invisible disabilities 	 Respect for others during group work Food security linked to population growth, ethics relating to selective breeding 	 Respect for others during group work Understanding how the human body works
Personal Development	 Redrafting extended answers allows development of resilience Working in groups develops confidence Homework and projects develops independence 	 Redrafting extended answers allows development of resilience Working in groups develops confidence Homework and projects develops independence 	 Redrafting extended answers allows development of resilience Working in groups develops confidence Homework and projects develops independence 	confidence	 Redrafting extended answers allows development of resilience Working in groups develops confidence Homework and projects develops independence 	 Redrafting extended answers allows development of resilience Working in groups develops confidence Homework and projects develops independence 	 Redrafting extended answers allows development of resilience Working in groups develops confidence Homework and projects develops independence 	 Redrafting extended answers allows development of resilience Working in groups develops confidence Homework and projects develops independence 	 Redrafting extended answers allows development of resilience Working in groups develops confidence Homework and projects develops independence 	 Redrafting extended answers allows development of resilience Working in groups develops confidence Homework and projects develops independence 	confidence
Careers	Climate Change scientist	Astrophysicist, Pilot	GP Surgeon Personal trainer	Microbiologist Oenologist Food scientist	Environmental scientist Material scientist Journalist	Metallurgist Explosives expert	Mechanic	Astronaut Electrical Engineer, Radiographer	Environmentalist Geneticist	Farmer Genetic engineer	Biologist, teacher, researcher, medicine, nutrition
Assessment opportunities	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes	Core practicals, Keyword spelling and definition tests, AP assessments, extended writing exam questions, homeworks, knowledge tests, quick quizzes
Personalised challenge for all (SEND/HPA)	SEND to focus developing Los: recall identify	 SEND to focus developing Los: recall, identify, match Scaffolds to support SEND 	SEND to focus developing Los: recall, identify, match Scaffolds to support SEND	SEND to focus developing Los: recall, identify, match Scaffolds to support SEND	SEND to focus developing Los: recall, identify, match Scaffolds to support SEND	SEND to focus developing Los: recall, identify, match Scaffolds to support SEND	SEND to focus developing Los: recall, identify, match Scaffolds to support SEND	SEND to focus developing Los: recall, identify, match Scaffolds to support SEND	SEND to focus developing Los: recall, identify, match Scaffolds to support SEND	SEND to focus developing Los: recall, identify, match Scaffolds to support SEND	SEND to focus developing Los: recall, identify, match Scaffolds to support SEND

HPA to be extended with the exceeding Los: cause and effect of wind chill, describing average kinetic energy	 HPA to be extended with the exceeding Los: comparing theories, analysing secondary sources 	HPA to be extended with the exceeding Los.	HPA to be extended with the exceeding Los.	HPA to be extended with the exceeding Los.	HPA to be extended with the exceeding Los.	HPA to be extended with the exceeding Los.	HPA to be extended with the exceeding Los.	HPA to be extended with the exceeding Los.	HPA to be extended with the exceeding Los.	HPA to be extended with the exceeding Los.
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