

	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
<b>Year 9 Science</b>	<b>Content delivered:</b> <b>Biology</b> Photosynthesis Starch testing Stomata HSW: Photosynthesis investigation Plant minerals Aerobic respiration Fermentation Biotechnology <b>Physics</b> Sound waves, water waves and energy Radiation Waves	<b>Content delivered:</b> <b>Biology</b> Natural selection Charles Darwin Extinction Preserving biodiversity Inheritance DNA Genetics Genetic modification <b>Chemistry</b> Types of reaction Conservation of mass	<b>Content delivered:</b> <b>Chemistry</b> Endothermic reactions Exothermic reactions Energy level diagrams Bond energies <b>Physics</b> Friction and drag Squashing and stretching Hooke's Law	<b>Content delivered:</b> <b>Physics</b> Pressure in gases Pressure in liquids Stress on solids <b>Biology GCSE Unit 1 Cells</b> Cell structure Microscopy Prokaryotic and eukaryotic cells Stem cells Mitosis Movement across membranes	<b>Content delivered:</b> <b>Biology GCSE Unit 1 Atomic structure and the periodic table:</b> Atomic structure Electronic structure Development of periodic table Metals and non-metals Groups 1, 7 & 0 Transition metals (Triple only)	<b>Content delivered:</b> <b>Physics GCSE Unit 1 Energy:</b> Energy stores and systems Kinetic energy Gravitational potential energy Elastic potential energy Specific heat capacity Power Energy transfers Efficiency Renewable and non-renewable resources Advantages and disadvantages of energy resources
<b>Key Words</b> <b>Level 2</b> <b>Level 3</b>	Photosynthesis, chlorophyll, chloroplast, stomata, limiting factor, independent variable, dependent variable, control variable, reliability, reproducibility, valid, continuous, discontinuous, deficiency, aerobic, anaerobic, respiration, cardiac, fermentation, lactic acid, ethanol, biotechnology, vibration, frequency, electromagnetic, spectrum, gamma rays, microwaves, infrared, ultraviolet, x-rays, amplitude, frequency	Extinction, poaching, biodiversity, ecosystem, habitat, conservation, natural selection, allele, gene, dominant, recessive, characteristic, inheritance, gamete, chromosome, probability, atom, compound, mixture, irreversible, conservation of mass, balancing, combustion, thermal decomposition, displacement, oxidation, reduction	Exothermic, endothermic, energy change, enthalpy change, reaction profile, solid, liquid, gas, speed, air resistance, contact forces, friction, gram, gravity, kilogram, magnetism, mass, newton, non-contact force, static electricity, up-thrust, water resistance, weight, compress, elastic limit, extension, Hooke's law, proportional, spring, lubricant, pascal, pressure, balanced forces, stationary, unbalanced	Gas pressure, upthrust, buoyancy, lift pascal, pressure, balanced forces, unbalanced, surface area,  Eukaryotic, prokaryotic, cytoplasm, nucleus, mitochondria, ribosome, palisade, specialised, differentiated, flagella, chloroplast, chlorophyll, vacuole, membrane, differentiation, objective lens, focus, magnification, micrometre, resolution, differentiation, chromosome, mitosis, prophase, metaphase, anaphase, telophase, equator, chromosome, embryonic	Nucleus, proton, neutron, electron, isotope, model, mass number, atomic number, group, period, shell, metal, non-metal, ion, displacement	Energy, Joule, transfer, dissipation, efficiency, kinetic, gravitational, elastic, specific heat capacity, power, Watt, kilo, renewable, non-renewable, insulation, rate
<b>Where previous knowledge has occurred and future development</b> <b>KS2 → KS3 → KS4 → KS5</b>	Biology KS2: How water is transported within plants KS3: Year 8 Flowers KS4: Year 10 Photosynthesis (B4.4) KS3: Year 10 Atoms (C4.1) KS5: Year 12 Biotechnology KS5: Year 13 Photosynthesis Physics KS2: How vibrations make sounds KS3: Year 8 light and sound KS4: Year 11 Waves (P4.6) KS5: Year 12 Waves and the particle nature of light	Biology KS2: Fossils and variation in offspring KS3: Year 8 Variation KS4: Year 11 Inheritance (B4.6) KS5: Year 13 Genetics Chemistry KS2: Comparing and grouping together materials based on their properties KS3: Year 8 Chemical formulae KS4: Year 10 Quantitative chemistry (C4.3) KS5: Year 12 Quantitative chemistry	Chemistry KS2: Comparing and grouping together materials based on their properties KS3: Year 8 Elements KS4: Year 10 Energy changes (C4.5) KS5: Year 12 Enthalpy changes and Hess cycles Physics KS2: Forces as pushes and pulls KS3: Year 7 Forces KKS4: Year 11 Forces (P4.5) KS5: Year 12 Mechanics	Physics KS2: Forces as pushes and pulls KS3: Year 7 Forces KKS4: Year 11 Forces (P4.5) KS5: Year 12 Mechanics  KS3: Year 7 – cell structure & diffusion KS3: Year 9 – genetics KS4: Unit 2 – organisation KS4: Unit 5 – Homeostasis KS5: Ultrastructure of the cell, membranes and fluid mosaic model	Chemistry KS2: States of matter KS3: Particle model and metals and non-metals KS4: Electrolysis KS5: s, p, d orbitals, periodicity, transitions metals	KS2: Investigating how things move KS3: Year 8 – waves KS3: Year 9 - friction KS4: Year 10 – nuclear radiation (P4) KS4: Year 11 – waves (P6) KS5: Simple harmonic motion
<b>Common Misconceptions</b>	Limiting factors all have the same shape graphs	Mutations are all negative	Exothermic means that the 'substance' gets hotter	Changing objective lens makes the image clearer	Cells and atoms are compatible Only metals can conduct electricity When a substance melts or boils, all of the bonds are broken	Whether nuclear energy is renewable or non-renewable
<b>Literacy</b>	Scientific writing (HSW): Investigating photosynthesis  NHTW reviews as starter activities	NHTW reviews as starter activities Writing to describe: the process of natural selection	Scientific writing (HSW): Exo and endothermic reactions Scientific writing (HSW): Investigating friction NHTW reviews as starter activities	Conversion of units Choosing and drawing appropriate graphs Rearranging formulae	Scientific writing (HSW): Separation techniques Writing to describe: Reactivity of group 1 and group 7 NHTW reviews as starter activities	Scientific writing (HSW): specific heat capacity NHTW reviews as starter activities
<b>Numeracy</b>	Calculating means Drawing and interpreting graphs	Calculating probability Analysing data	Simple addition Working with negative numbers	Conversion of units Choosing and drawing appropriate graphs Rearranging formulae	Calculating relative atomic mass Decimal places Significant figures	Rearranging equations Converting units Calculating percentages
<b>Homework</b>	Completion of Kerboodle/Seneca/Carousel quizzes	Completion of Kerboodle/Seneca/Carousel quizzes	Completion of Kerboodle/Seneca/Carousel quizzes	Completion of Kerboodle/Seneca/Carousel quizzes	Completion of Kerboodle/Seneca/Carousel quizzes	Completion of Kerboodle/Seneca/Carousel quizzes
<b>Assessment this half-term</b>	Unit test for physics	Unit test for biology	Unit test for chemistry GL Assessment	Biology unit test for section 1	Chemistry unit 1 test	Physics unit 1 test

<b>Career opportunities Employment Links</b>	LIFE SKILLS: Understanding the best conditions for plant growth & understanding how heat breaks down substances EMPLOYMENT: Horticulturist	LIFE SKILLS: Understanding how inherited diseases can be passed through generations. EMPLOYMENT: Geneticist	LIFE SKILLS: Understanding how chemical reactions are used in producing things we use every day. EMPLOYMENT: Chemical engineer	LIFE SKILLS: Understanding the roles of different cells in the body EMPLOYMENT: Cellular biologist	LIFE SKILLS: Understanding why different elements react EMPLOYMENT: Radioactive waste consultant	LIFE SKILLS: Understanding why efficiency is important EMPLOYMENT: Wind farm technician
<b>Enrichment</b>				Nancy Rothwell Award	STEM Week Activities	
<b>Practical activities/HSW</b>	Photosynthesis Oscilloscope Limiting factors in photosynthesis	Fossil examples Extracting DNA  Combustion Thermal decomposition	Endothermic reactions Exothermic reactions friction Hooke's Law Pressure	Microscopy Scientific drawings Osmosis practical	Halogen displacement reactions Group 1 reactions with water	Specific heat capacity Energy transfers
<b>Employability Skills</b>	<b>Aiming high</b> Creativity Leadership Listening Presenting <b>Problem solving</b> Staying positive <b>Literacy</b> Numeracy Independence <b>Communication</b> Teamwork	<b>Aiming high</b> Creativity Leadership Listening Presenting Problem solving <b>Literacy</b> Numeracy Independence <b>Communication</b> Teamwork	<b>Aiming high</b> Creativity Leadership Listening Presenting <b>Problem solving</b> <b>Literacy</b> Numeracy Independence <b>Communication</b> Teamwork	<b>Aiming high</b> Creativity Leadership Listening Presenting <b>Problem solving</b> <b>Literacy</b> Numeracy Independence <b>Communication</b> Teamwork	<b>Aiming high</b> Creativity Leadership Listening Presenting <b>Problem solving</b> <b>Literacy</b> Numeracy Independence <b>Communication</b> Teamwork	<b>Aiming high</b> Creativity Leadership Listening Presenting <b>Problem solving</b> <b>Literacy</b> Numeracy Independence <b>Communication</b> Teamwork
<b>IT Skills</b>	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes
<b>Notes/developments /standardisation comments</b>						