Subject : Science			Year: 9 & 10 Year 2		
AUTUMN		**SPRING**		**SUMMER**	
Half term 1	**Half term 2**	**Half term 3**	**Half term 4**	**Half term 5**	**Half term 6**
Theme/ topic: **B7 Biology – Ecology** **C8,9,10 Chemistry – Analysis and Earth's resources**	**Theme/ topic:** **P4 Physics – Forces** **B6 Biology - Homeostasis**	**Theme/ topic:** **P6 and 7 Physics – Waves, magnetism and electromagnetism.** **C6 Chemistry – Rates of reaction**	**Theme/ topic:** **B 7 Biology – Inheritance** **C7 Chemistry - Organics**	**Theme/ topic:** **B7 Biology – Evolution** **P8 Physics - Space**	**Theme/ topic:** **Working scientifically: recap of required practical skills, Maths skills and end of year exam prep.**
By the end of this half term pupils will know:					
Quadrat, transect, abiotic, biotic, biomass, Chromatography spectroscopy ions pollution finite, sustainable.	Scalar, vector, constant, enzyme thermoregulatory dialysis diabetes hormones endocrine neuron.	Collision, activation energy, random, catalyst pressure concentration, surface area	Fuels, fractional distillation, combustion, cracking polymerisation, alkane alkene Variation, allele dominant recessive homozygous meiosis.	Supernova, nebulae, red giant, orbit natural selection selective breeding	
They will understand (key concepts):					
Biology: All organisms, including humans, depend on, interact with and affect the environments in which they live and other organisms that live there. Living organisms may form populations of single species, communities of many species and	**Physics:** Forces make things change. Understanding forces helps us to predict and control physical change. The phenomena of 'action at a distance' and the related concept of the field as the key to analysing electrical,	**Chemistry:** During chemical reactions, atomic nuclei and electrons are rearranged and new substances are formed. Reactions can occur when molecules collide and do so at different rates due to differences in molecular collisions	**Biology:** Genetic information is passed from each generation to the next, this information and the environment affect the features, growth and development of organisms. The characteristics of a living organism are	**Biology:** Differences between organisms cause species to evolve by natural selection of better adapted individuals. The great diversity of organisms is the result of evolution. Evolution occurs by the process of natural selection and accounts	

ecosystems, interacting with each other, with the environment and with humans in many different ways The chemicals in ecosystems are continually cycling through the natural world **Chemistry:** Substances can move between the atmosphere, hydrosphere, geosphere and biosphere as part of large-scale Earth systems.	magnetic and gravitational effects That proportionality, for example between weight and mass of an object or between force and extension in a spring, is an important aspect of many models in science. **Biology:** Organisms are made of one or more cells, which need a supply of energy and molecules to carry out life processes. The fundamental units of living organisms are cells, which may be part of highly adapted structures including tissues, organs and organ systems, enabling life processes to be performed more effectively	**Physics:** Waves radiate information. Understanding waves helps us to communicate. The use of models, as in the wave models of light and of sound	influenced by its genome and its interaction with the environment **Chemistry:** Materials are either made of a single chemical substance or a mixture of substances which each have distinctive properties. The shapes of molecules (groups of atoms bonded together) and the way giant structures are arranged is of great importance in terms of the way they behave.	both for biodiversity and how organisms are all related to varying degrees. **Physics:** Understanding the uniqueness of the Earth and the vastness of space gives us perspective and awe.	
They will know how to:					
Recognise when to apply a knowledge of sampling techniques to ensure any samples collected are representative	Carry out experiments appropriately, having due regard to the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations	Apply a knowledge of a range of techniques, apparatus, and materials to select those appropriate for experiments	The ways in which scientific methods and theories develop over time Present reasoned explanations, including	Develop their use of scientific vocabulary	

Carry out and represent mathematical and statistical analysis Carry out experiments appropriately, with due regard to the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations	Recognise the importance of scientific quantities and understand how they are determined Be objective, evaluating data in terms of accuracy, precision, repeatability and reproducibility and identifying potential sources of random and systematic error	Interpret observations and other data, including identifying patterns and trends, making inferences and drawing conclusions Evaluate risks both in practical science and the wider societal context, including perception of risk Use prefixes and powers of ten for orders of magnitude (e.g. tera, giga, mega, kilo, centi, milli, micro and nano)	relating data to hypotheses Use SI units and IUPAC chemical nomenclature	The ways in which scientific methods and theories develop over time To recognise the importance of peer review of results and of communication of results to a range of audiences. Use a variety of concepts and models to develop scientific explanations and understanding	
Link to prior learning					