Science Stage Three Curriculum – Carre's Grammar School

Science						
	Autumn 1	**Autumn 2**	**Spring 3**	**Spring 4**	**Summer 5**	**Summer 6**
Year 7	**Working Scientifically; Cells; Energy; Particles and their behaviour,** • Basic skills required for investigative Science • Looking at cells, their structure and function • Unicellular organisms and diffusion • What is energy? • How is energy transferred? • How is energy used? • What is matter? How does matter change in solid, liquid and gaseous forms		**Structure and function of body systems; Forces; Elements, atoms and compounds** • Organisation of cells in plants and animals • Respiratory system • Musculoskeletal system • What are elements, atoms and compounds • How are the elements organised? • Chemical formulae • Discovering what forces are, how they are measured, what impact different forces have on objects.		**Health and Lifestyle; Electricity and Magnetism; Reactions** • The effects of healthy and unhealthy lifestyles on your body -diet & digestion, drugs, alcohol and smoking. • How electrical circuits work • How electricity is generated • Magnets and magnetic fields & using magnets. • What are chemical reactions? • Using word and symbol equations • Combustion, thermal decomposition, endothermic and exothermic reactions	
	Assessment **Baseline test – on completion of Topic 1** **Mid-topic extended response questions (ERQs)** **MCQ quizzes at the end of each topic**		**Assessment** **0-1 written assessment** **Mid-topic extended response questions (ERQs)** **MCQ quizzes at the end of each topic**		**Assessment** **0-2 written assessment** **Mid-topic extended response questions (ERQs)** **MCQ quizzes at the end of each topic**	
Year 8	**Separation techniques; Reproduction; Motion & Pressure** • What are mixtures and • What are pure substances? What are solutions? What is solubility? • How can mixtures be separated (filtration, evaporation, distillation, chromatography). • Reproduction in plants and animals (humans, inc. puberty & adolescence) • Speed, motion graphs • Pressure in gases and liquid sand on solids • Moments •		**Ecosystems; Waves; Acids, alkalis and metals** • Photosynthesis and respiration • Leaves, plant minerals and chemosynthesis • Food chains & webs • Ecosystems as a whole • What are waves • Sound waves, echoes and ultrasound • What is light and how does it behave - reflection, refraction and diffraction. • What are acids and alkalis, how can they be identified - indicators • Neutralisation and making salts.		**Adaptation and inheritance; Space; The Earth** • Competition and adaptation in organisms • Adapting to change, variation • How inheritance works • Natural selection and distinction. • The night sky • Solar system • The Earth & moon • Earth and atmosphere • Types of rocks and the rock cycle. • Climate change and recycling	
	Assessment **0-3 written assessment** **Mid-topic extended response questions (ERQs)** **MCQ quizzes at the end of each topic**		**Assessment** **0-4 written assessment** **Mid-topic extended response questions (ERQs)** **MCQ quizzes at the end of each topic**		**Assessment** **0-5 written assessment** **Mid-topic extended response questions (ERQs)** **MCQ quizzes at the end of each topic** **0-6 written assessment**	

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Year 9 Biology	**TOPIC 1 - Cells and organisation** • Microscopes • RP1 - Using a light microscope • Plant and animal cells (structure and function) • Specialised cells in plants and animals • Cell division & stem cells **Transport in and between cells** • Diffusion, osmosis and active transport • RP3: The effect of concentration on the mass of plant tissue (osmosis) • Exchanging materials	**TOPIC 2 - Plant biology** • Tissues and organs in plants • Plant transport systems • Evaporation and transpiration • Photosynthesis • RP6: The effect of light intensity on the rate of photosynthesis	**TOPIC 3 - Animal biology** • Tissues and organs • Digestive system • Chemistry of food • RP4: Food tests • Enzymes and digestion • RP5: The effect of pH on enzyme action • Blood & blood vessels • The heart & circulation • The lungs and gaseous exchange • Respiration (aerobic and anaerobic) • Metabolism and the liver • Non-communicable disease
	Assessment • Multiple choice question quizzes (MCQs) in the middle of each term. • Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at the end of Term 1.	**Assessment** • Multiple choice question quizzes (MCQs) in the middle of each term. • Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at the end of Term 3.	**Assessment** • Multiple choice question quizzes (MCQs) in the middle of each term. • Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at end of April/beginning of May.
Year 9 Chemistry	**Atomic Structure** • **Atoms** • Chemical equations • Separating mixtures • Fractional distillation • Chromatography • History of the atom • Structure of the atom • Ions, atoms and Isotopes • Electronic structures	**The Periodic Table** • Development of the Periodic Table • Electronic structures and the Periodic Table • Group I – the alkali metals • Group VII – the halogens • Explaining trends • The transition elements **Structure & Bonding** • States of Matter • Atoms into ions • Ionic Bonding • Ionic Giant structures	• Covalent bonding • Properties of small molecules • Covalent giant structures • Graphene + Fullerenes • Polymers • Bonding in metals / properties of metals • Nanoparticles • Uses of nanoparticles **Quantitative Chemistry** • Conservation of mass in a balanced equation • Relative formula mass
	Assessment • Multiple choice question quizzes (MCQs) in the middle of each term. • Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at the end of Term 1.	**Assessment** • Multiple choice question quizzes (MCQs) in the middle of each term. • Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at the end of Term 3.	**Assessment** • Multiple choice question quizzes (MCQs) in the middle of each term. • Formal written assessment using past exam questions covering all content covered since the

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			beginning of Year 9 at end of April/beginning of May.
Year 9 Physics	**Topic 3 – The Particle Model of Matter** • Using kinetic theory to explain the properties of solids, liquids and gases. • Calculating the densities of materials. • Describing the changes to the internal energy of substances when they are being heated or cooled. • Describing and explaining the relationships between temperature, pressure and volume of a gas.	**Topic 4 – Atomic structure** • Describing the development of models of the atom. • Describing instability of atomic nuclei, radioactive decay and half-life. • Describing the properties of nuclear radiation. • Writing nuclear decay equations using nuclide notation. • Explaining the hazards associated with nuclear radiation. • Explaining medical uses of sources of nuclear radiation. • Comparing the processes of nuclear fission and nuclear fusion.	**Topic 1 – Energy** • Describing systems, energy stores and transfers • Calculating power and efficiency. • Testing different thermal insulators to reduce heat loss in homes. • Considering the advantages and disadvantages of different energy resources used to generate electricity. • Using the law of conservation of energy in calculations involving kinetic, gravitational potential and elastic potential energy.
	Assessment • Multiple choice question quizzes (MCQs) in the middle of each term. • Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at the end of Term 1.	**Assessment** • Multiple choice question quizzes (MCQs) in the middle of each term. • Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at the end of Term 3.	**Assessment** • Multiple choice question quizzes (MCQs) in the middle of each term. • Formal written assessment using past exam questions covering all content covered since the beginning of Year 9 at end of April/beginning of May.