KAA Curriculum Overview	Science	Year 9	EOY Exam	Sequencing and Progression	
Rationale *Give an overview of what students are studying this year and why. Link directly to your overall curriculum intent.* Students start their GCSE science course this year. In physics, students will study particles at work, radiation and energy resources. In biology, students will cell biology and organisation. In chemistry, students will study atomic structure, the periodic table and bonding. The curriculum will give the students both substantive and disciplinary knowledge that they need to understand and explain phenomena that they experience in their everyday lives. The students will know more and be able to explain more over time. They will also be encouraged to think for themselves and to be curious and analytical as they look at experimental data.			*What content and skills will be assessed in the EOY exam?* All content taught this year will be assessed, alongside skills: - Drawing graphs - Calculations - Data interpretation	*How does this year build on what they've learnt last year?* Directly links to each biology, chemistry and physics unit taught at KS3	*How will it benefit them as they move forward next year?* Topics covered in Y9 will be built on across the GCSE course. Knowledge learned will continue to be interleaved into future MTPs to ensure knowledge recall is strong.

Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Sum 1**	**Sum 2**
Link to MTP Overview	Aut1 MTP Y9					
Topic studied & Fertile Question	Cell Biology	Atomic Structure & Periodic Table	Particles at Work & Radiation	Organisation	Bonding, structure and properties of matter	Energy Resources
Adjustments following last assessments / evaluation.	None	None	None	None	None	None
Key knowledge and skills students need to have gained by the end of the unit	**Knowledge** -Structure of eukaryotic (plant and animal) and prokaryotic cells -Differentiation and specialisation of plant and animal cells -Using a microscope and calculating magnification from magnified images -The cell cycle, mitosis and binary fission -Stem cells -Movement of substances through diffusion, active transport and osmosis **Skills** RP1 -Use a light microscope to observe, draw and label biological specimens RP2 -Investigate the effect of concentrations of salt or sugar solutions on the mass of plant tissue	**Knowledge** -Using the periodic table to identify elements and information about the number of protons, neutrons and electrons -Separating mixtures through evaporation, fractional distillation & chromatography -Structure of the atom to include protons, neutrons and electrons -Models of the atom (plum pudding, nuclear and Bohr) -Drawing and writing electron configurations -Isotopes -Forming ions -Development of the periodic table (Newlands and Mendeleev) -Explaining patterns in group 1, group 7, group 8 and transition metals **Skills:** -Safe use of a range of equipment to separate chemical mixtures -Explain how testing a prediction can support or refute a new scientific idea	**Knowledge** -Density of materials including how to calculate it. -Investigation into density using eureka can -States of matter -Internal energy relating to kinetic and potential energy -Interpreting and drawing heating and cooling curves -Calculating specific heat capacity of substances and interpreting data relating to SHC -Calculating and understanding meaning of specific latent heat of fusion and vaporisation -Gas pressure and the effect of temperature, concentration and volume. -Structure of an atom and development of atomic model -The process and conclusions made from Rutherford's gold foil experiment -Properties, uses and dangers of alpha, beta and gamma radiation -Decay equations for alpha, beta and gamma radiation -Radioactive decay and half-life **Skills** RP- Density - Use appropriate apparatus to make and record the	**Knowledge** -Organisational hierarchy from organelle to organ system -Structure and function of the digestive system -Food tests for lipids, proteins, starch and sugar -Digestive enzymes and factors that affect their rate -The role of bile in digestion -The components of blood and their role. -Structure and function of arteries, veins and capillaries -The structure of the heart and circulatory system -CHD, stents and statins -Gas exchange in the alveoli **Skills** RP3 -Use qualitative reagents to test for a range of carbohydrates, lipids and proteins. To include: Benedict's test for sugars, iodine test for starch and Biuret reagent for protein. RP4	**Knowledge** -Particle model and states of matter -Formation of ions, ionic bonding and properties of ionic compounds -Covalent bonding -Structure and properties of simple molecules and giant covalent structures -Structure and properties of carbon allotropes to include diamond, graphite, graphene and fullerenes -Metallic bonding -Properties of pure metals and alloys -SA:Vol ratio & nanoparticles **Skills** -Recognise substances as small molecules, polymers or giant structures from diagrams showing their bonding	**Knowledge** -Renewable and non-renewable energy resources -Evaluation of different types of energy resources -The role of the national grid and the way it works -Energy consumption in the home and ways to reduce energy consumption

			measurements needed to determine the densities of regular and irregular solid objects and liquids. RP- SHC - An investigation to determine the specific heat capacity of one or more materials.	-Investigate the effect of pH on the rate of reaction of amylase enzyme.		
How is understanding assessed at the end of the unit?	End of topic test	End of topic test	End of topic test	End of topic test	End of topic test	End of topic test