

CORE KNOWLEDGE

What I will know and understand by the end of Year 7.



This year in science we will be learning about		Topic Logos.	Key Vocabulary:	
1	<ul style="list-style-type: none"> Organisation - Biological molecules that make up the diet, energy in food, the skeleton, the digestive system, reproduction, gametes, fertilisation, pregnancy and birth. Energy - energy stores and transfers, types of energy resources. The Particle Model- The particle, solids, liquids and gases, changes in state, physical and chemical changes. 		Carbohydrate Protein Digestion Enzyme Gamete	Fertilisation Renewable Non- Renewable Physical Chemical
2	Assessment Point 1. <ul style="list-style-type: none"> Cells and Transport - levels of organisation, animal cells and organelles, diffusion. Variation - Watson, Crick and Franklin, DNA, genes, chromosomes and heredity. Chemistry of the Atmosphere- Structure of the Earth, the atmosphere, rocks and the rock cycle. Bioenergetics - Aerobic respiration. 		Organelle Mitochondria Ribosome Respiration Nucleus	Chromosome Atmosphere Igneous Metamorphic Sedimentary
3	<ul style="list-style-type: none"> Cells and Transport - Plant cells and organelles. Bioenergetics - Photosynthesis and plant adaptations. Atomic Structure - Introduction to atoms, elements, compounds and mixtures. Chemical Changes - The rearrangement of atoms in a chemical reaction, chemical formulae and equations. Electricity and magnetism - Static electricity, series and parallel circuits. Waves - longitudinal and transverse waves, the human ear, amplitude, frequency and ultrasound. 		Chloroplast Vacuole Photosynthesis Glucose Atom	Element Compound Series Parallel Current
4	Assessment Point 2. <ul style="list-style-type: none"> Atomic Structure- Changes of state, chemical and physical properties of elements, the periodic table, detecting gases, separating mixtures, chemical symbols and formulae, atomic model and subatomic particles. 		Properties Evaporation Distillation Filtration Chromatography	Diffusion Proton Neutron Electron Symbol
5	<ul style="list-style-type: none"> Rates of Reaction - Collision theory and the effect of temperature and concentration on rate of reaction. Energy Changes - Exothermic and endothermic reactions. Space - Seasons, the solar system, stars and galaxies. 		Collision Catalyst Concentration Exothermic Endothermic	Galaxy Universe Gravity Orbit
6	Assessment Point 3. <ul style="list-style-type: none"> Ecology - Food chains, food webs, accumulation of toxic substances and sampling techniques. Forces - Contact and non-contact forces, balanced and unbalanced forces, air resistance, friction and gravity. 		Organism Accumulation Quadrat Sampling Ecosystem	Resultant Air resistance Friction Balanced

We will learn to use these command words; **state, describe, calculate, define, choose, draw, give, identify, label, name, write**
 We will learn to develop these practical skills; **Control variables, risk assessments, obtaining data and analysis of data.**

Target Grade:		AP1:		AP2:		AP3:	
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CORE KNOWLEDGE

What I will know and understand by the end of Year 8.



This year in science we will be learning about		Topic Logos	Key Vocabulary:	
1	<ul style="list-style-type: none"> Ecology- Plant reproduction, pollination and germination, food chains and webs, competition, photosynthesis Using Resources - Global warming, carbon cycle, recycling, human impact. 	 	Pollination Decompose Competition Emissions Germination	Recycle Population Photosynthesis Environmental
2	Assessment Point 1. <ul style="list-style-type: none"> Atomic Structure and Particle Model - Periodic table, elements, alkali metals, halogens and compounds. Energy - energy stores and transfers, conduction, convection, insulation, radiation, non renewable and renewable energy. 	 	Periodic Conduction Elements Convection Compounds	Insulation Reactivity Radiation Symbols Resources
3	<ul style="list-style-type: none"> Waves - Properties of waves, reflection, refraction, eyes, colour, sound, ears ultrasound and sonar. Organisms, Cells and Transport- Plant and animal cells, organisation, digestion, breathing, heart and lungs, movement. 	 	Reflection Organisation Refraction Specialised Transverse	Emulsify Ultrasound Contract Spectrum Circulatory
4	Assessment Point 2. <ul style="list-style-type: none"> Chemical Changes - Chemical and physical changes, signs of a chemical reaction, neutralisation reactions between acids and metals, reactions between metals and carbonates. Chemistry of the Atmosphere- Arrangement of the universe, seasons, weathering, rock cycle and metal extraction. 	 	Indicator Phases Reactivity Arrangement Neutralisation	Weathering Carbonate Universe Chemical Extraction
5	<ul style="list-style-type: none"> Variation - Reproductive organs, menstrual cycle, fertilisation and implantation, pregnancy, variation, DNA, Inheritance, evolution. 		Reproduction Menstrual Fertilisation	Variation Inheritance
6	Assessment Point 3. <ul style="list-style-type: none"> Forces - Balanced and unbalanced forces, springs, distance time graphs, friction, mass v weight, pressure and density. 		Pressure Density	Resultant Extension Velocity

Target Grade:		AP1:		AP2:		AP3:	
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CORE KNOWLEDGE

What I will know and understand by the end of Year 9.



This year in science we will be learning about		Topic Logos.	Key Vocabulary:	
1	<p>Cells and Transport</p> <ul style="list-style-type: none"> Cell structure and function, organelles, magnification, transport of substances, cell division RP - Magnification, RP - Osmosis. <p>Assessment Point 1.</p> <p>Space</p> <ul style="list-style-type: none"> Stars, the universe and our solar system. 		<p>Organelle Nucleus Mitochondria Ribosomes Osmosis</p>	<p>Mitosis Chromosome Differentiation Supernova Satellite</p>
2	<p>Atomic Structure and the Periodic Table</p> <ul style="list-style-type: none"> Separation techniques, subatomic particles, history of the atom, the periodic table and its history. <p>Quantitative Chemistry 1</p> <ul style="list-style-type: none"> Conservation of mass, balancing equations, RFM and RAM. <p>Particle Model-</p> <ul style="list-style-type: none"> Density, changes of state and particle motion. RP- Density. 		<p>Proton Neutron Electron Isotope RAM</p>	<p>Conservation RFM Density Motion Irregular</p>
3	<p>Bonding</p> <ul style="list-style-type: none"> Metallic bonding, alloys, ionic bonding, giant ionic structures, covalent bonding, simple covalent molecules, giant covalent structures and polymers. <p>Assessment Point 2.</p>		<p>Metallic Covalent Ionic Properties Structure</p>	<p>Ion Delocalised Graphite Diamond Polymer</p>
4	<p>Energy Changes</p> <ul style="list-style-type: none"> Endothermic and exothermic reactions and bond energies. RP - Energy changes. <p>Atomic Structure (physics)</p> <ul style="list-style-type: none"> Structure of the atom and its development, nuclear radiation and decay, half life. 		<p>Endothermic Exothermic Enthalpy Bond energy</p>	<p>Alpha Beta Gamma Half life Radioactive</p>
5	<p>Chemical Changes</p> <ul style="list-style-type: none"> Redox reactions, extraction of metals, neutralisation and electrolysis. RP- Making salts, RP- Electrolysis. 		<p>Oxidation Reduction Extraction Neutralisation</p>	<p>Electrolysis Ion Salt Solution</p>
6	<p>Assessment Point 3.</p> <p>Infectious Disease</p> <ul style="list-style-type: none"> Viruses, bacteria, fungal diseases, malaria, white blood cells, vaccinations, antibiotics, medicines and development of new drugs. <p>Electricity - Appliances</p> <ul style="list-style-type: none"> Energy types and transfers, AC/DC, plugs, electrical power, work done and the national grid. 		<p>Virus Bacteria Protist Vaccination Antibodies</p>	<p>Antibiotics Alternating current Direct current Work done</p>
Target Grade:		AP1:	AP2:	AP3:

CORE KNOWLEDGE

What I will know and understand by the end of Year 10.



This year in science we will be learning about		Topic Logos	Key Vocabulary:	
1	<ul style="list-style-type: none"> Cells and Transport, Atomic Structure and Energy (Recap) Particle Model- Density, changes of state and particle motion. RP- Density. Quantitative Chemistry 1 - Conservation of mass, balancing equations, RFM and RAM. Bonding -Metallic bonding and alloys, ionic bonding and giant ionic structures, covalent bonding, simple covalent molecules and giant covalent structures, polymers. <p>Assessment Point 1.</p>		Density Motion Irregular Conservation RFM	RAM Metallic Covalent Ionic Delocalised
2	<ul style="list-style-type: none"> Infectious Disease -Viruses, bacteria and fungal diseases, malaria, white blood cells, vaccinations, antibiotics, medicines and development of new drugs. Energy Changes -Endothermic and exothermic reactions and bond energies. RP - Energy changes. Atomic Structure (physics) - Structure of the atom and its development, nuclear radiation and decay, half life. Chemical Changes -Redox reactions, extraction of metals, neutralisation and electrolysis. RP - Making salts, RP Electrolysis. 		Virus Bacteria Vaccination Antibodies Endothermic	Exothermic Half life Radioactive Extraction Electrolysis
3	<ul style="list-style-type: none"> Organisation -Cancer, lifestyle factors, tissues and organs, exchange of gases, digestion, enzymes, plant tissues. RP- Enzymes, RP- Food Tests. Electricity - Appliances - Energy types and transfers, AC/DC, plugs, electrical power, work done and the national grid. <p>Assessment Point 2.</p>		Organ system Lifestyle Enzyme Digestion Xylem	Phloem Alternating current Direct current Work done
4	<ul style="list-style-type: none"> Quantitative Chemistry 2- calculating masses and concentrations, balancing using moles. Bioenergetics -Photosynthesis, limiting factors, uses of glucose, aerobic and anaerobic respiration, fermentation, metabolism and exercise. RP- Photosynthesis. Electricity - Circuits Circuit diagrams, charges, potential difference, resistance, I-V graphs, LDRs and thermistors. RP- Resistance , RP I-V characteristics 		Concentration Mole Photosynthesis Anaerobic Respiration	Fermentation Resistance Thermistor Current LDR
5	<p>Assessment Point 3 - All Paper 1 Content.</p> <ul style="list-style-type: none"> Rates of Reaction -Measuring rate of reaction, collision theory, concentration, temperature, surface area, catalysts, reversible reactions and equilibrium. RP- Rates. 		Collision Equilibrium Catalyst Reversible	Temperature Concentration Pressure
6	<ul style="list-style-type: none"> Forces - Scalar and vector quantities, distance, displacement, speed, velocity, acceleration, gravity, resultant forces, work done, energy transfer, stopping distance and momentum. RP - Acceleration, RP - Extension of a spring. Organic Chemistry - Fractional distillation, alkanes and cracking Chemistry of the Atmosphere. - Greenhouse gases, climate change, carbon footprint, pollutants, early and modern atmosphere, changes in oxygen and carbon dioxide. 		Scalar Vector Resultant Velocity Acceleration	Hydrocarbon Alkane Cracking Atmosphere Climate
Target Grade:		AP1:	AP2:	AP3:

CORE KNOWLEDGE

What I will know and understand by the end of Year 11.



This year in science we will be learning about		Topic Logos		Key Vocabulary:	
1	<ul style="list-style-type: none"> Recap of - Homeostasis, rates of reaction, forces, variation, waves. Ecology - Abiotic and biotic factors, distribution of organisms, adaptations, nutrient cycles, feeding relationships, biodiversity, pollution and deforestations. RP - Field investigations. Organic Chemistry - Fractional distillation, alkanes and cracking. Magnetism - Poles of a magnet, electric fields, electromagnetism, Fleming's left-hand rule, motors. Chemistry of the Atmosphere. - Greenhouse gases, climate change, carbon footprint, pollutants, early and modern atmosphere, changes in oxygen and carbon dioxide. 	 	Biotic Abiotic Biodiversity Atmosphere Climate	Hydrocarbon Alkane Cracking Viscous Electromagnet	
2	<ul style="list-style-type: none"> Using Resources - Potable and pure water, purification, sewage treatment, the use of natural resources, extraction of copper, life cycle assessments and recycling. Chemical Analysis - Gas tests, pure and impure substances, formulations and chromatography. RP- Chromatography. <p>Assessment Point 1 - All Paper 1 Content.</p>	 	Potable Pure Distillation Extraction Phytomining	Bioleaching Formulation Chromatography	
3	<ul style="list-style-type: none"> Organisation - Cancer, lifestyle factors, tissues & organs, exchange of gases, digestion, enzymes, plant tissues, RP - Enzymes, RP - Food tests Quantitative Chemistry - Conservation of mass, balancing equations, relative formula mass (M_r), relative atomic mass (A_r), calculating masses in concentrations, balancing using moles. Electricity circuits - circuit diagrams, charges, potential difference, resistance, IV graphs, LDR, thermistors, RP - resistance, RP- IV graphs 	 	Organ system Lifestyle Enzyme Digestion Xylem	Resistance Thermistor Current A_r (Atomic mass) M_r (Formula mass)	
4	<ul style="list-style-type: none"> Homeostasis - Nervous system, reflexes, homeostasis, regulation of glucose, hormones and fertility. RP - Reaction Times. Chemical Changes - REDOX reactions, extraction of metals, neutralisation, electrolysis, RP - Making salts, RP - Electrolysis Forces - Scalar and vector, distance, displacement, speed, velocity, acceleration, gravity, resultant forces, work done, energy transfer, stopping distance and momentum. RP - Acceleration, RP - Extension of a spring. <p>Assessment Point 2. All Paper 1 and Paper 2 content.</p>	 	Homeostasis Oxidation Extraction Neutralisation Solution	Electrolysis Scalar Vector Velocity Acceleration	
5	GCSE Exams.				

Target Grade:

AP1:

AP2:

AP3: