



YEAR 11 TRIPLE SCIENCE 2023-2024

YEAR	TRINITY 2	MICHAELMAS 1	MICHAELMAS 2	LENT 1	LENT 2	TRINITY 1
11	<p>Big Idea: Forces Forces In this unit pupils will learn about scalar and vector quantities, interaction of forces, resultant forces, determining the overall resultant force, moments and equilibrium. Pupils will also learn about acceleration, interpretation of distance time graphs and velocity time graphs, Newton's second law and terminal velocity, reaction times, stopping distances, momentum, impact forces and car safety. They will also learn about forces and elasticity and investigate Hooke's law before learning about pressure on surfaces, liquids and atmospheric pressure.</p> <p>Big Idea: Reactions Rate and Extent of Reactions In this unit pupils will learn about how to identify the rate of reaction from experimental data and graphs. They will also learn about the factors that affect the rate of reaction (temperature, concentration, pressure, surface area, catalysts) and</p>	<p>Big Idea: Matter Big Idea: Reactions Chemical Analysis In this unit pupils will learn about pure substances, mixtures and formulations, separating substances using chromatography and how to test for gases. Pupils will also learn about how to identify cations using flames tests, precipitate reactions, identifying anions and evaluative instrumental methods.</p> <p>Big Idea: Matter Big Idea: Reactions Organic Chemistry In this unit pupils will learn about the composition of crude oil, fractional distillation, hydrocarbons and their properties, reactions of hydrocarbons and cracking. Pupils will also learn about the structure and reactions of alkenes, alcohols and carboxylic acids. They will learn about the formation of polymers through addition and condensation, natural polymers and the structure of DNA.</p>	<p>Big Idea: Earth Chemistry of the Atmosphere In this unit pupils will learn about the Earth's atmosphere, origins and its evolution to the current atmosphere. Pupils will also learn about greenhouse gases and other pollutants and their impact on the atmosphere</p> <p>Big Idea: Genes Inheritance, Variation and Evolution In this unit pupils will learn about sexual and asexual reproduction, cell division by meiosis, the structure of DNA, the human genome and protein synthesis. They will also learn about genetic inheritance, inherited disorders and the benefits and risks of genetic screening. Pupils will learn about variation, selective breeding, genetic engineering and cloning before learning about evolution by natural selection, other theories for evolution, speciation and the evidence to support evolution. They will also learn how all living organisms are classified</p>	<p>Big Idea: Ecosystems Ecology In this unit pupils will learn about ecosystems, abiotic and biotic factors within them and how to sample the organisms within an ecosystem. Pupils will also learn about the relationships between organisms in an ecosystem including the feeding relationships, competition and adaptations that enable them to survive. They will also learn about the different cycles within an ecosystem such as the decay cycle, including what affects decomposition, water cycle and the carbon cycle. Pupils will also learn about biodiversity, methods used to maintain biodiversity and the effects of land, air and water pollution on biodiversity. They will also learn about the trophic levels in an ecosystem, pyramids of number, biomass and transfer of biomass. Pupils will learn about food security, factors that may affect this, farming techniques and sustainable fisheries.</p> <p>Big Idea:</p>	<p>Big Idea: Earth Using Resources Pupils will learn about types of Earth's resources, the need for potable water, water purification, recycling materials and the need to carry out life cycle assessments. They will also learn about corrosion of metals, preventing corrosion, the use of alloys and the properties of polymers, ceramics, glass and composites. Pupils will learn about the Haber process, the conditions required and the production of fertilisers.</p> <p>Big Idea: Earth Big Idea: Forces Space Physics In this unit pupils will learn about the solar system, the lifecycle of stars, formation of elements, satellites and orbits. Pupils will also learn about red shift as a theory for the expanding universe and the Big Bang theory</p>	



	<p>link them to the collision theory. Pupils will also learn about reversible reactions, dynamic equilibrium and how to alter the conditions to maximise yield of products</p> <p>Big Idea: Organisms Homeostasis and Response</p> <p>In this unit pupils will learn about the process of homeostasis, the responses from the nervous system including reflex actions, effects on reaction times. Pupils will also learn about the structure and function of the brain, the structure and function of the eye, how we are able to see and methods to correct vision. Pupils will also learn about the endocrine systems and the different hormones involved in controlling blood sugar levels, maintaining water levels, the menstrual cycle and in fertility treatments. They will learn about how plant hormones affect plant growth and their use in agriculture and horticulture.</p>	<p>Big Idea: Waves</p> <p>Waves</p> <p>In this unit pupils will learn about the different types of waves and their properties, how to calculate wave speed, reflection and refraction of waves. Pupils will also learn about the electromagnetic spectrum, the properties of the waves and their uses.</p>		<p>Electromagnetism</p> <p>Magnets and Magnetism</p> <p>In this unit pupils will learn about the properties of magnets, magnetic field, electromagnetism, the motor effect, Fleming's left hand rule and magnetic flux density. Pupils will also learn about electromagnetic devices, induction, the generator effect and transformers.</p>		
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