



YEAR 10 TRIPLE SCIENCE 2023-2024

YEAR	TRINITY 2	MICHAELMAS 1	MICHAELMAS 2	LENT 1	LENT 2	TRINITY 1
10	<p>Big Idea: Energy Energy In this unit pupils will learn how to calculate the amount of energy in kinetic stores, gravitational stores, elastic stores and thermal stores. They will also learn about work done, power and how these link to energy.</p> <p>Big Idea: Organisms Organisation in plants Pupils will learn about the structure of plants and the movement of substances through transpiration and translocation.</p> <p>Big Idea: Organisms Infection and Response In this unit pupils will learn about the different types of pathogens, how diseases are spread and how this can be prevented. Pupils will also learn about the different causes and treatment of diseases in humans before learning about vaccinations, antibiotics, painkillers and antibiotic resistance, the production and use of monoclonal antibodies. They will also learn about new drugs are developed</p>	<p>Big Idea: Matter Particle Model In this unit pupils will learn about the arrangement of particles in different states and how this links to density, how to calculate the density of regular and irregular objects. Pupils will also learn about the changes of state, the changes in internal energy when these occur, specific latent heat, gas pressure and the effect of temperature on this.</p> <p>Big Idea: Ecosystems Bioenergetics In this unit pupils will learn about the process of photosynthesis, factors affecting the rate of photosynthesis and limiting factors. Pupils will also learn about the uses of glucose in plants, how to test for the presence of starch and how we can manipulate photosynthesis in greenhouses. They will also learn about aerobic respiration, anaerobic respiration, effects of exercise on respiration and metabolism.</p>	<p>Big Idea: Matter Atomic Structure In this unit pupils will learn about the structure of the atom, the development of the atomic model, types of radioactivity and their properties, decay equations and half-life. They will also learn about irradiation and contamination of materials and how to dispose of radioactive substances safely. Pupils will learn about the different uses of radiation, background radiation and dosage, nuclear fission and nuclear fusion.</p> <p>Big Idea: Reactions Chemical Changes In this unit pupils will learn about the reactions of metals, metal compounds and how the reactivity series can be used to determine how to extract metals. Pupils will represent chemical reactions using word, symbol and half-equations. They will also learn about the reactions of acids, the pH scale, neutralisation, making salts, strong and weak acids and pH concentration. They will also learn about the</p>	<p>Big Idea: Electromagnetism Electricity In this unit pupils will learn about series and parallel circuits, charge, current and potential difference. They will also learn about resistance, Ohm's law, the relationship between current and potential difference in resistors, filament lamps and diodes. Pupils will also learn about resistance in series and parallel circuits as well as special resistors like LDRs and thermistors. Pupils will learn about AC and DC current, wiring a plug, mains electricity and the National Grid. They will also learn about calculating the energy transfer and power in circuits as well as static electricity.</p> <p>Big Idea: Reactions Quantitative Chemistry In this unit pupils will learn about how to use chemical quantities including relative masses, percentage by mass, moles, reacting masses, limiting reactants and concentration of solutions and conservation of mass. Pupils will learn about the</p>	<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: Organisms Homeostasis and Response 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>and the testing process. Pupils will learn about diseases that may affect plants, how to detect them and the natural defences plants have.</p>		<p>process of electrolysis of molten and aqueous solutions. Energy Changes Pupils will learn about the energy changes in chemical reactions, how to represent them on energy level diagrams and how to calculate them using bond energies. They will also learn about the reactions inside chemical cells, fuel cells and their benefits and risks.</p>	<p>importance of percentage yield and atom economy in industry and the need for accurate measurements using titrations and how to calculate unknown concentrations using this process. They will also learn about calculating gas volumes.</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>	
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