Year 8

Half term 1		Half term 2		Half term 3	Half term 4	Half term 5	Half term 6	
Electricity	Breathing, respiration and digestion	Breathing, respiration and digestion	Acids and alkalis, chemical reactions	Contact forces, moments/levers and Hooke's law (Work done for Year 2023-24 only)	Genes, variation and reproduction, menstrual cycle	Climate, Earths resources and rocks	Plant cells, photosynthesis	Magnets and electromagnets
Applying calculations, showing working Presenting and recording data. Health and safety, evaluating risks. Evaluating data, suggesting sources of error.	*Applying mathematical concepts to calculate surface area*	*Applying calculations.*	*Health and safety, evaluating risks. Making predictions. Presenting and recording data. Developing graph skills, applying mathematical techniques, calculating results. Identify further questions from results.*	*Making predictions. Presenting and recording data. Developing graph skills, applying mathematical techniques, calculating results. Repeatability and reproducing results.*	*Developing graph skills – continuous and categoric variation. Evaluating data.*	*Analysing data, using graphs. Describing changes to understanding based on the new evidence available, the importance of peer review.*	*Analysing data, using graphs*	*Making predictions. Presenting and recording data. Analysing data, using graphs.*
					Spring assessment			End of year assessment
Forces • forces due to static electricity. **Electricity and electromagnetism** **Current electricity** • electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches	**Gas exchange systems** • the structure and functions of the gas exchange system in humans, including adaptations to function • the mechanism of breathing to move air in and out of the lungs, using a pressure model to	**Nutrition and digestion** • content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed • calculations of energy requirements	**Chemical Reactions** • representing chemical reactions using formulae and using equations • defining acids and alkalis in terms of neutralisation reactions • the pH scale for measuring acidity/alkalinity; and indicators • reactions of acids with metals to	**Forces** • moment as the turning effect of a force • forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water • forces measured in newtons, measurements of stretch or	**Reproduction** • reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation,	**Earth and atmosphere** • the composition of the Earth • the structure of the Earth • the rock cycle and the formation of igneous, sedimentary and metamorphic rocks • Earth as a source of limited	**Material cycles and energy** **Photosynthesis** • the reactants in, and products of, photosynthesis, and a word summary for photosynthesis • the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants	**Forces** • forces between magnets **Magnetism** • magnetic poles, attraction and repulsion • magnetic fields by plotting with compass, representation by field lines • Earth's magnetism, compass and navigation

meet and current as flow of charge • potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current • differences in resistance between conducting and insulating components (quantitative). **Static electricity** • separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects • the idea of electric field, forces acting across the space between objects not in contact	explain the movement of gases, including simple measurements of lung volume • the impact of exercise, asthma and smoking on the human gas exchange system **Cellular respiration** • aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life • a word summary for aerobic respiration • the process of anaerobic respiration in humans and micro-organisms, including fermentation, and a word summary for anaerobic respiration	in a healthy daily diet • the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases • the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts) • the importance of bacteria in the human digestive system • plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots. **Health** • the effects of recreational	produce a salt plus hydrogen • reactions of acids with alkalis to produce a salt plus water • what catalysts do.	compression as force is changed • force-extension linear relation; Hooke's Law as a special case • work done and energy changes on deformation • comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with movements, temperatures, changes in positions in a field, in elastic distortions and in chemical compositions **Balanced forces** • opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface. **Pressure in fluids** • atmospheric pressure, decreases with increase of height as weight of air above decreases with height • pressure in liquids, increasing with depth; upthrust effects, floating and sinking • pressure measured by ratio of force over area – acting normal to any surface.	gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta • reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms. • the variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation	resources and the efficacy of recycling • the carbon cycle • the composition of the atmosphere • the production of carbon dioxide by human activity and the impact on climate.	and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere • the adaptations of leaves for photosynthesis. • the role of leaf stomata in gas exchange in plants.	• the magnetic effect of a current, electromagnets, D.C. motors (principles only).

	• the differences between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organism.	drugs (including substance misuse) on behaviour, health and life processes.						