Long-term planning

Science - Year 8

Year 8 Themes	Autumn term 1	Autumn term 2	Spring term 1	Spring term 2	Summer term 1	Summer term 2
	Reactions (15)	Electricity and Magnetism (15)	Ecosystems (15)	Waves (15)	Genes (15)	Project work
Fundamental ideas of chemical reactions, building on the Matter topic taught at Y7 Introduction of electromagnetism, building on ideas on energy and met in Y7 Ecosystems and interdependence, building on the 'Organisms' unit in Y7 Introduction of wave behaviour and energy transfer. This builds on the Y7 'Energy' topic.	6.1 Acids and Alkalis 6.2 Metals and non-Metals 6.3 Types of Reaction 6.4 Chemical Energy	2.1 Potential difference and Resistance 2.2 Current 2.3 Magnetism 2.4 Electromagnets	9.1 Interdependence 9.2 Plant reproduction 9.3 Respiration 9.4 Photosynthesis	4.1 Light 4.2 Sound 4.3 Wave Effects 4.4Wave Properties	10.1 Variation 10.2 Human Reproduction 10.3 Evolution 10.4 Inheritance	
	Students will learn about					
	The Properties, reactions, and uses of acids and alkalis. The pH scale and the use of indicators. The uses and reactions of metals and how they link to the relative reactivity of each metal. Chemical reactions, as the	The relationship between current, potential difference and resistance and how their behaviour in series and parallel circuits. Factors that affect the resistance of a conductor. The rules of magnetism and how magnets might be	The interdependence of organisms in an ecosystem, including: food webs and insect pollinated crops The importance of plant reproduction through insect pollination in human food security How organisms affect, and are	Transverse and longitudinal waveforms. The properties of waves and how they transfer energy. The relationship between wavelength, wave speed and frequency.	Inheritance, chromosomes, DNA and genes and the variation within species. Watson, Crick, Wilkins and Franklin and the development of the DNA model Variation within species. Darwin's theory of evolution.	

Genes and reproduction, builds on the 'Organisms' topic of Y7	rearrangement of atoms Representing chemical reactions using formulae and using equations Combustion, thermal decomposition, neutralisation, oxidation and displacement reactions.	useful in everyday contexts. The structure and uses of electromagnets. Electric motors.	affected by, their environment, including the accumulation of toxic materials. The role of photosynthesis in the conversion of the sun's light, into food that is stored in the plant. The role of respiration in the metabolism of sugars and oxygen, to provide energy for the seven life processes.	How sounds are produced, transmitted and detected as longitudinal waves. How light is transmitted, reflected, refracted and detected, as transverse waves. The structure of the ear and the human hearing range.	Maintaining biodiversity to avoid the extinction of species and the use of seed and gene banks. to preserve hereditary material. Selective breeding, cloning and genetic modification. Ethical issues.	
	Vocabulary and the concepts they link to					
	Metals, Non-metals, Displacement, Oxidation, Reactivity, pH, Indicators, Base, Concentration, Catalysts, Exothermic reaction, Endothermic reaction, Chemical bond, Fuel, Chemical reaction, Physical	Potential difference (voltage), Resistance, Electrical conductor, Electrical insulator, negatively charged, Electrons, Charged up, Current, In parallel Field, Electromagnet, Solenoid, Core, Magnetic force,	Food web, Food chain, Ecosystem, Environment Population, Producer, Consumer, Decomposer, Pollen, Ovules, Pollination, Fertilisation, Seed, Fruit, Carpel, Aerobic respiration, Anaerobic respiration (fermentation),	Vibration Volume Pitch Amplitude Wavelength, Frequency, Hertz, Vacuum, Oscilloscope, Auditory range, Echo, Incident ray, Reflected ray, Normal line, Angle of	Species, Variation, Continuous variation, Discontinuous variation, Gamete, Fertilisation, Ovary, Testicle, Oviduct, or fallopian tube, Uterus, or womb, Ovulation, Menstruation, Reproductive system, Penis,	

	change, Reactants, Products, Conserved	Permanent magnet, Magnetic poles	Fertilisers, Photosynthesis, Chlorophyll, Stomata	reflection, Angle of incidence, Refraction, Absorption, Transparent, Translucent, Opaque, Convex, lens, concave lens, Retina, Ultrasound, Ultraviolet (UV), Microphone, Loudspeaker, Pressure wave, Transmission	Vagina, Foetus, Gestation, Placenta, Amniotic fluid, Umbilical cord, Population, Natural selection, Extinct, Biodiversity, Competition, Evolution, Inherited characteristics, DNA, Chromosomes, Gene	
	Assessment					
	2 Key pieces Diagnostic quiz 1 keyword spelling test 1 end of unit test	2 Key pieces Diagnostic quiz 1 keyword spelling test 1 end of unit test	2 Key pieces Diagnostic quiz 1 keyword spelling test 1 end of unit test	2 Key pieces Diagnostic quiz 1 keyword spelling test 1 end of unit test	2 Key pieces Diagnostic quiz 1 keyword spelling test 1 end of unit test 1 Summative assessment	
	Diversity & development of cultural capital					
		Research contributions of key figures in electricity (e.g., Edison, Tesla) Explore how electricity is generated and its impact on society. Use mathematical calculations for electrical resistance and power	Study the effects of habitat destruction and conservation efforts (link with Geography). Discuss the role of ecosystems in cultural practices (link with Religious Studies)		Investigate genetic diseases and cultural perspectives on genetics. Explore ethical considerations in genetic modification	

		Discuss environmental impact of chemical industries.				
	Cross-curricular opportunities and enrichment					
		History, Geography, Maths	Geography, RE		Geography, RE, History	