Subject	Science	Year Group	8								
	Autumn			Spring			Summer				
	Biology	Chemistry	Physics	Biology	Chemistry	Physics	Biology	Chemistry	Physics	Physics
Scheme title	Human nutrition and exercise	Matter	Forces	Plant nutrition and growth	Reactions	Electromagnets	Evolution	Earth	Energy	Waves
Purpose of scheme	Pupils learn the key food nutrients, their function in the body and the importance of a healthy balanced diet. They will then learn the organs involved in digestion and how the body digests this food. They will then learn how the body uses this food as a fuel (aerobic respiration). Finally pupils will look at the respiratory system, gas exchange and th effect of exercise on breathing. .	Pupils learn about the periodic table of elements and different groups within the periodic table. Pupils learn to identify elements and compounds from their formulae. Pupils learn about the makeup and properties of polymer, ceramic and composite materials.	Pupils develop their knowledge of forces from year 7 to be able to define equilibrium and explain how objects move using the idea of resultant forces. This then allows pupils to understand why and how particular objects floats and others sink. This leads pupils into understanding how forces act to allow pressure to be applied in different circumstances.	Pupils learn about photosynthesis, why plants need photosynthesis and how light insnsity effects the rate of photosynthesis. They will then look at the cross section of a leave and be abft to explan gas exchange in plants. Finally they will be able to describe transpiration and translocation and the importance of plant minerals.	Pupils learn about different chemical reactions such as combustion and thermal decomposition. Pupils learn about exothermic and endothermic reactions Students begin to describe exothermic and endothermic reactions using energy level diagrams. Pupils learn to categorise reactions into either physical or chemical reactions.	Pupils build on their knowledge of circuits and build and compare series and parallel circuits. Pupils also learn what an electromagnet is and how they are used.	Pupils will learn the structure of DNA and what it does, they will then look at how it is inherited. Pupils will then learn about adaptations in plant and animals. They will begin to look at Darwins theory of evolution by natural selection. Finally pupils will begin learning how organisms become extinct and the importance of conservation.	Students will learn about the composition of the Earth's atmosphere and the carbon cycle. They will learn how human activities can damage and limit the Earth's resources, including the atmosphere. Natural recycling and the recycling of waste materials are considered.	In Year 8 pupils build on their knowledge from Year 7 and look at the difference between heat and temperature. They study how energy is transferred via conduction, convection and radiation then plan an investigation on how insulation reduces energy transfers by these methods.	Building on their knowledge from Year 7 pupils compare transverse and longitudinal waves. Pupils discover what ultrasound is andresearch how it is used. Pupils also study coloured light and the dangers of UV light
Knowledge in sequence	This builds on knowledge from year 7 on the order of organisation in humans and begin to learn the role of whole organ systems. All of this content will be expanded on in B1 and B3 at KS4	Pupils are introduced to the periodic table and then build on this to describe the properties of individual groups in the periodic table.	Knowledge of forces acting in equilibrium is used to determine resultant movement, explain why objects sink and float. Pupils also learn about pressure (within a gas then liquid) and how to calculate pressure on a surface.	Builds on knowledge from year 7 that plants are producers. All of this content will be expanded on in B2 and B4 at KS4..	Pupils build on their knowledge of elements and compounds in Y8 Matter to describe a number of chemical reactions.	Pupils recap their knowledge of circuits, how to build them and draw circuit diagrams from year 7. This is then expanded upon to explain how an electromagnet works and where they are used in real life applications	Builds on knowledge from year 7 about genes and variation. Pupils will then extend their knowledge on this content in B6, and B7	In the year 8 Earth topic students start to learn about the atmosphere, the carbon cycle and global warming. Students also learn about the Earth's resources and how they can become damaged. This will be further built on in C9.	Pupils will explain the term thermal energy and then lead themselves into exporing and describing when conduction, convection and radiation are used in heating. Exploring how heating can be reduced by the use of insulators pupils will conduct scientific research into the best insulators and how these work. Students will finally look at how the terms temperature and heat energy relate to each other but are defined independantly.	Recap their knowledge of sound from year 7 then pupils will build upon this by exploring ultrasound waves and expanding upon auditory rangeis. Sound will be explored using longitudinal waves. Knowledge of light will be shnaced by describing it as a transverse wave. Light will also be explored as white light and coloured light.
Skills	Planning an investigation, variables, using and manipulating equipment, writing a conclusion, making scientific models and interpretating data + graphs.	Drawing a graph and analysing patterns.	Drawing a graph, data analysis, writing an evaluation.	Planning an investigation, variables, using and manipulating equipment, writing a conclusion and interpratating data + graphs.	Planning an investigation, using variables and writing a conclusion.	Real life application, building of circuits	Making models, constructing punnett squares and analysing data	Interpreting data	Planning an investigation, making a prediction, drawing conclusions,	Research, drawing scientific diagrams, making predictions
Key words	Carbohydrate, fat, protein, vitamins, minerals, fibre, water, digestive system, enzyme, amylase, starch, scurvy, ricketts, anemia, obesity, aerobic respiration, gas exchange, mitochondria, asthma	Elements, compounds, groups, periods, chemical formula, polymer, composite	Balanced forces, displace, force, non-contact, pressure, upthrust, buoyancy, density, fluid, newton N, pascals Pa, resultant force, tension	Photosynthesis, Chlorophyll, chloroplast, glucose, starch, iodine, transpiration, translocation, xylem, phloem, stomata, fertiliser, minerals,	Combustion, thermal decomposition, physical change, chemical change, catalyst, energy level diagram, exothermic and endothermic.	Attract, compass, conduct, core, field, magnetic field, metals, solenoid, electromagnet	DNA, chromosome, gene, inheritance, evolution, extinction, natural selection, allele, adaptation, competition, conservation	Atmosphere, carbon cycle, global warming, sustainable development, ore, metal extraction.	Conduct, energy, radiation, thermal energy, temperature, convection, energy transfer, insulator, thermal insulator	Crest, frequency, longitudinal, microphone, transverse, superposition, ultrasound, hertz Hz, loudspeaker, trough, wavelength
End point	Pupils should be able to describe a balanced diet and the effects of an unbalanced diet. They should be able to explain how food is digested and how the body uses this food as a fuel in aerobic respiration. They should then be able to explain how we breath including the exchange of gases. They should describe the effect of exercise on breathing rate .	Pupils are able to navigate and use the periodic table using groups and periods and identify elements in compounds. Pupils are able to identify polymers, ceramics and composite materials and describe their properties.	Pupils should be able to identify forces particularly on objects on water and objects in the air. Pupils should be able to use the terms density, buoyancy and upthrust to describe why objects float or sink. Pupils will be able to calculate pressure on an object and describe how pressure works in a liquid and gas.	Pupils should be able to explain what photosynthesis is, why it is needed, where it takes place and how light intensity effects it. They should also be able to describe that glucose is stored as starch and how we test a leaf for starch. They should then be able to label a cross section of a leave and explain how it is adapted for gas exchange. Finally pupils shoyuld describe transpiration and translocation and the importance of fertilisers.	Pupils are able to describe combustion and thermal decomposition in terms of particle diagrams and word equations. Pupils are able to identify whether a reaction is exothermic or endothermic.	Pupils are able to draw circuit diagrams of electromagnets and explain how they work. Pupils will also be able to recall real life applications of electromagnets and explain why these are used in favour of permanent magnets.	Pupils should be able to describe the structure of DNA, its role and where it is found in a cell. Pupils should be able to construct punnett squares to show the probability of the offspring inheriting a trait or disease. Pupils will than be able to describe how plants and animals are adapted to survive and relate this to darwins theory of natural selction. Pupils can then explain the causes of extinction and the importance of conservation.	Pupils are able to describe the composition of the Earth's atmosphere and describe how humans are changing the atmosphere. Pupils are able to process of metal extraction related to reactivity.	Identify when conduction, convection and radiation are used in real life applications. Explain how insulfors work and conclude which insulators work most effectively using scientific to support their answer. Distinguish the difference between temperature and thermal energy.	Pupils will be able to identify key points of a wave and explain the terms frequncey and wavelength. Pupils will also be able to explain when ultrasound is used. Describe how we see colours in white light and when using filters.
Assessment Methods	Formative assessment: questions and exam style questions. Block test	Formative assessment: exam style questions and composite material question. Block test.	Formative assessment: questions and exam style questions. Block test	Formative assessment: questions and exam style questions. Block test	Formative assessments: exam style questions and combustion paragraph. Block test.	Formative assessment: questions and exam style questions. Block test	Formative assessments: exam style questions. Block test.	Formative assessments: exam style questions and recycling assessment. Block test.	Formative assessment: questions and exam style questions. Block test	Formative assessment: questions and exam style questions. Block test