



The

Lloyd Williamson

Schools Foundation

**Curriculum Topics
and
Programmes of Study**

Chalkers

2021-2022

English

Pupils will continue to develop their knowledge of and skills in writing, refining their drafting skills and developing resilience to write at length. They should be taught to write formal and academic essays as well as writing imaginatively. They should be taught to write for a variety of purposes and audiences across a range of contexts. This requires an increasingly wide knowledge of vocabulary and grammar.

Teachers will show pupils how to understand the relationships between words, how to understand nuances in meaning, and how to develop their understanding of, and ability to use, figurative language.

Pupils will be taught to control their speaking and writing consciously, understand why sentences are constructed as they are and to use Standard English. They should understand and use age-appropriate vocabulary, including linguistic and literary terminology, for discussing their reading, writing and spoken language. This involves consolidation, practice and discussion of language. It is important that pupils learn the correct grammatical terms in English and that these terms are integrated within teaching.

Teachers will build on the knowledge and skills that pupils have been taught at earlier key stages. Decisions about progression should be based on the security of pupils' linguistic knowledge, skills and understanding and their readiness to progress to the next stage. Pupils whose linguistic development is more advanced should be challenged through being offered opportunities for increased breadth and depth in reading and writing. Those who are less fluent should consolidate their knowledge, understanding and skills, including through additional practice.

Text styles and genres for study and comprehension:

1. Develop an appreciation and love of reading, and read increasingly challenging material independently through:

- Short stories
- Legends
- Science fiction
- Horror
- Ghost stories
- Crime
- Television sketches
- Monologues
- Television screenplays
- Stage plays (2 Shakespeare plays)
- Poetry

- Newspaper reports
- Biographies
- Autobiographies
- Travel writing
- Letters
- Brochures
- Speeches
- Advertisements
- Seminal world literature
- English literature both pre 1914 and contemporary

2. Understand increasingly challenging texts

3. Read critically

Writing and Language Focus:

1. Write accurately, fluently and at length for pleasure and information through:

- Spoken English – accent and dialect, informal/formal register, how spoken language changes, differences between speech and writing
- Spelling – English word roots, rules, using a dictionary and Thesaurus
- Grammar – nouns, adjectives and articles, pronouns and noun phrases, verbs, adverbs and prepositions, tenses and phrases, simple and compound sentences, complex sentences
- Punctuation – commas, full stops, apostrophes, colons, semi-colons, inverted commas and paragraphs
- Authoring skills – reasons for writing, planning, proofreading and presentation
- Study skills – skimming, scanning and close reading, using the library, research from information texts, making notes and summaries
- Writing for a variety of purposes and audiences

Speaking and Listening:

- Speak confidently and effectively listener
- Interview with targeted listening and appropriate questioning
- Group work
- Formal debates
- Confidence in front of an audience
- Making a persuasive speech

Mathematics

Through the mathematics content, pupils will be taught to:

Develop fluency

- consolidate their numerical and mathematical capability and extend their understanding of the number system and place value to include decimals, fractions, powers and roots
- select and use appropriate calculation strategies to solve increasingly complex problems
- use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships
- substitute values in expressions, rearrange and simplify expressions, and solve equations
- move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]
- develop algebraic and graphical fluency, including understanding linear and simple quadratic functions
- use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics.

Reason mathematically

- extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations
- extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically
- identify variables and express relations between variables algebraically and graphically
- make and test conjectures about patterns and relationships; look for proofs or counter-examples
- begin to reason deductively in geometry, number and algebra, including using geometrical constructions
- interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning
- explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally.

Solve problems

- develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics
- begin to model situations mathematically and express the results using a range of formal mathematical representations
- select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.

We will cover the following:

Number

- Place value up to billions
- Working with whole numbers using the four rules
- Sequences
- Positive and negative
- Using the memory key on a calculator
- BODMAS
- Factors and multiples: odd and even, power of numbers,
- Squares and square roots
- Cubes and cube roots
- Prime numbers and prime factors
- Lowest common multiples
- Fractions: equivalent, reducing to the lowest terms, comparing, addition, subtraction, multiplication and division of, sequences, problems and square root of
- The decimal System: place value, necessary and unnecessary zeros, adding, subtracting, multiplying, dividing, links with fractions and vice versa, problems, estimation, decimal places and rounding off, accuracy of decimal calculations
- Percentages
- Wages and salaries
- Simple Interest
- Household finance
- Mental arithmetic skills using the four rules of number
- Mental Arithmetic (Schofield and Sims – expectation of being on book 5/6)

Measurement

- Length,
- Weight,
- Capacity,
- Conversion of metric and imperial units,
- Estimating measures,
- Money

- Ratio and proportion
- Time, Distance, Speed

Shape and Space

- Angles and straight lines
- Symmetry
- Plane figures
- Perimeters and Areas
- Solid figures
- Maps, bearings and scale drawings
- Transformations and tessellations

Handling Data

- Graphs
- Simple statistics

Science

Working scientifically

Through the content across all three disciplines, pupils should be taught to:

Scientific attitudes

- pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility
- understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review
- evaluate risks.

Experimental skills and investigations

- ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience
- make predictions using scientific knowledge and understanding
- select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate
- use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety
- make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements
- apply sampling techniques.

Analysis and evaluation

- apply mathematical concepts and calculate results
- present observations and data using appropriate methods, including tables and graphs
- interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions
- present reasoned explanations, including explaining data in relation to predictions and hypotheses
- evaluate data, showing awareness of potential sources of random and systematic error
- identify further questions arising from their results.

Measurement

- understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature
- use and derive simple equations and carry out appropriate calculations
- undertake basic data analysis including simple statistical techniques.

Subject content – Biology

Pupils should be taught about:

Structure and function of living organisms

Cells and organisation

- cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope
- the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts
- the similarities and differences between plant and animal cells
- the role of diffusion in the movement of materials in and between cells
- the structural adaptations of some unicellular organisms
- the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.

The skeletal and muscular systems

- the structure and functions of the human skeleton, to include support, protection, movement and making blood cells
- biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles
- the function of muscles and examples of antagonistic muscles.

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 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.

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 explain the movement of gases, including simple measurements of lung volume
- the impact of exercise, asthma and smoking on the human gas exchange system
- the role of leaf stomata in gas exchange in plants.

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, 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.

Health

- the effects of recreational drugs (including substance misuse) on behaviour, health and life processes.

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 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.

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
- the differences between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organism.

Interactions and interdependencies

Relationships in an ecosystem

- 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 affected by, their environment, including the accumulation of toxic materials.

Genetics and evolution

Inheritance, chromosomes, DNA and genes

- heredity as the process by which genetic information is transmitted from one generation to the next
- a simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model
- differences between species
- the variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation
- the variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection
- changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction

- the importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.

Subject content – Chemistry

Pupils should be taught about:

The particulate nature of matter

- the properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure
- changes of state in terms of the particle model.

Atoms, elements and compounds

- a simple (Dalton) atomic model
- differences between atoms, elements and compounds
- chemical symbols and formulae for elements and compounds
- conservation of mass changes of state and chemical reactions.

Pure and impure substances

- the concept of a pure substance
- mixtures, including dissolving
- diffusion in terms of the particle model
- simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography
- the identification of pure substances.

Chemical reactions

- chemical reactions as the rearrangement of atoms
- representing chemical reactions using formulae and using equations
- combustion, thermal decomposition, oxidation and displacement reactions
- defining acids and alkalis in terms of neutralisation reactions
- the pH scale for measuring acidity/alkalinity; and indicators
- reactions of acids with metals to produce a salt plus hydrogen
- reactions of acids with alkalis to produce a salt plus water
- what catalysts do.

Energetics

- energy changes on changes of state (qualitative)
- exothermic and endothermic chemical reactions (qualitative).

The Periodic Table

- the varying physical and chemical properties of different elements
- the principles underpinning the Mendeleev Periodic Table
- the Periodic Table: periods and groups; metals and non-metals
- how patterns in reactions can be predicted with reference to the Periodic Table
- the properties of metals and non-metals
- the chemical properties of metal and non-metal oxides with respect to acidity.

Materials

- the order of metals and carbon in the reactivity series
- the use of carbon in obtaining metals from metal oxides
- properties of ceramics, polymers and composites (qualitative).

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 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.

Subject content – Physics

Pupils should be taught about:

Energy

Calculation of fuel uses and costs in the domestic context

- comparing energy values of different foods (from labels) (kJ)
- comparing power ratings of appliances in watts (W, kW)
- comparing amounts of energy transferred (J, kJ, kW hour)
- domestic fuel bills, fuel use and costs
- fuels and energy resources.

Energy changes and transfers

- simple machines give bigger force but at the expense of smaller movement (and vice versa): product of force and displacement unchanged
- heating and thermal equilibrium: temperature difference between two objects leading to energy transfer from the hotter to the cooler one, through contact (conduction) or radiation; such transfers tending to reduce the temperature difference: use of insulators
- other processes that involve energy transfer: changing motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels.

Changes in systems

- energy as a quantity that can be quantified and calculated; the total energy has the same value before and after a change
- 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
- using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes.

Motion and forces

Describing motion

- speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time)
- the representation of a journey on a distance-time graph
- relative motion: trains and cars passing one another.

Forces

- forces as pushes or pulls, arising from the interaction between two objects
- using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced 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 compression as force is changed
- force-extension linear relation; Hooke's Law as a special case
- work done and energy changes on deformation
- non-contact forces: gravity forces acting at a distance on Earth and in space, forces between magnets and forces due to static electricity.

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.

Balanced forces

- opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface.

Forces and motion

- forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only)
- change depending on direction of force and its size.

Waves

Observed waves

- waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition.

Sound waves

- frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound
- sound needs a medium to travel, the speed of sound in air, in water, in solids
- sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal
- auditory range of humans and animals.

Energy and waves

- pressure waves transferring energy; use for cleaning and physiotherapy by ultrasound; waves transferring information for conversion to electrical signals by microphone.

Light waves

- the similarities and differences between light waves and waves in matter
- light waves travelling through a vacuum; speed of light
- the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface
- use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye
- light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras
- colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.

Electricity and electromagnetism

Current electricity

- electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches 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.

Magnetism

- magnetic poles, attraction and repulsion
- magnetic fields by plotting with compass, representation by field lines
- Earth's magnetism, compass and navigation
- the magnetic effect of a current, electromagnets, D.C. motors (principles only).

Matter

Physical changes

- conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation, dissolving
- similarities and differences, including density differences, between solids, liquids and gases
- Brownian motion in gases
- diffusion in liquids and gases driven by differences in concentration
- the difference between chemical and physical changes.

Particle model

- the differences in arrangements, in motion and in closeness of particles explaining changes of state, shape and density, the anomaly of ice-water transition
- atoms and molecules as particles.

Energy in matter

- changes with temperature in motion and spacing of particles
- internal energy stored in materials.

Space physics

- gravity force, weight = mass x gravitational field strength (g), on Earth $g=10$ N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only)
- our Sun as a star, other stars in our galaxy, other galaxies
- the seasons and the Earth's tilt, day length at different times of year, in different hemispheres
- the light year as a unit of astronomical distance.

Table Covering Years 7 - 8

	Part 1 Year 7		Part 2 Year 8	
Forces	Speed	Gravity	Contact forces	Pressure
Electromagnetics	Voltage and Resistance	Current	Electromagnetics	Magnetism
Energy	Energy Costs	Energy Transfer	Work	Heating and Cooling
Waves	Sound	Light	Wave Effects	Wave Properties

Matter	Particle Model	Separating Mixtures	Periodic Table	Elements
Reactions	Metals and Non-metals	Acids and Alkalis	Chemical Energy	Types of Reaction
Earth	Earth Structure	Universe	Climate	Earth Resources
Organisms	Movement	Cells	Breathing	Digestion
Ecosystems	Interdependence	Plant Reproduction	Respiration	Photosynthesis
Genes	Variation	Human Reproduction	Evolution	Inheritance

Table Covering Physics: Year 9 (We are currently working with the new teachers to and will be in touch with the updated Chemistry and Biology curriculum)

Year 9
Energy Transfer
Energy Resources
Forces and Motion
Work and Power
Sound
Light
Properties of Wave
Static Electricity
Electric Circuits

History

Pupils will extend and deepen their chronologically secure knowledge and understanding of British, local and world history, so that it provides a well-informed context for wider learning. Pupils will learn to identify significant events, make connections, draw contrasts, and analyse trends within periods and over long arcs of time. They should use historical terms and concepts in increasingly sophisticated ways. They should pursue historically valid enquiries including some they have framed themselves, and create relevant, structured and evidentially supported accounts in response. They should understand how different types of historical sources are used rigorously to make historical claims and discern how and why contrasting arguments and interpretations of the past have been constructed.

In planning to ensure the progression described above through teaching the British, local and world history outlined below, teachers should combine overview and depth studies to help pupils understand both the long arc of development and the complexity of specific aspects of the content.

History will be taught in relation to its impact on us today.

Topics will include but not be limited to:

- the development of Church, state and society in Medieval Britain 1066-1509
- the development of Church, state and society in Britain 1509-1745
- ideas, political power, industry and empire: Britain, 1745-1901
- challenges for Britain, Europe and the wider world 1901 to the present day
- a local history study
- the study of an aspect or theme in British history that consolidates and extends pupils' chronological knowledge from before 1066
- at least one study of a significant society or issue in world history and its interconnections with other world developments [for example, Mughal India 1526-1857; China's Qing dynasty 1644-1911; Changing Russian empires c.1800-1989; USA in the 20th Century].

Geography

Pupils should consolidate and extend their knowledge of the world's major countries and their physical and human features. They should understand how geographical processes interact to create distinctive human and physical landscapes that change over time. In doing so, they should become aware of increasingly complex geographical systems in the world around them. They should develop greater competence in using geographical knowledge with reference to current politics and world events, approaches and concepts [such as models and theories] and geographical skills in analysing and interpreting different data sources. In this way pupils will continue to enrich their locational knowledge and spatial and environmental understanding.

Pupils should be taught to:

Locational knowledge

- extend their locational knowledge and deepen their spatial awareness of the world's countries using maps of the world to focus on Africa, Russia, Asia (including China and India), and the Middle East, focusing on their environmental regions, including polar and hot deserts, key physical and human characteristics, countries and major cities

Place Knowledge

understand geographical similarities, differences and links between places through the study of human and physical geography of a region within Africa, and of a region within Asia.

Human and physical geography

- understand, through the use of detailed place-based exemplars at a variety of scales, the key processes in:
 - physical geography relating to: geological timescales and plate tectonics; rocks, weathering and soils; weather and climate, including the change in climate from the Ice Age to the present; and glaciation, hydrology and coasts
 - human geography relating to: population and urbanisation; international development; economic activity in the primary, secondary, tertiary and quaternary sectors; and the use of natural resources
- understand how human and physical processes interact to influence, and change landscapes, environments and the climate; and how human activity relies on effective functioning of natural system.

Geographical skills and fieldwork

- build on their knowledge of globes, maps and atlases and apply and develop this knowledge routinely in the classroom and in the field
- interpret Ordnance Survey maps in the classroom and the field, including using grid references and scale, topographical and other thematic mapping, and aerial and satellite photographs
- use Geographical Information Systems (GIS) to view, analyse and interpret places and data
- use fieldwork in contrasting locations to collect, analyse and draw conclusions from geographical data, using multiple sources of increasingly complex information.

Religious Education and Citizenship

Teaching will develop pupils' understanding of democracy, government and the rights and responsibilities of citizens. Pupils should use and apply their knowledge and understanding whilst developing skills to research and interrogate evidence, debate and evaluate viewpoints, present reasoned arguments and take informed action.

Pupils should be taught about:

- the development of the political system of democratic government in the United Kingdom, including the roles of citizens, Parliament and the monarch
- the operation of Parliament, including voting and elections, and the role of political parties
- the precious liberties enjoyed by the citizens of the United Kingdom
- the nature of rules and laws and the justice system, including the role of the police and the operation of courts and tribunals
- the roles played by public institutions and voluntary groups in society, and the ways in which citizens work together to improve their communities, including opportunities to participate in school-based activities
- the functions and uses of money, the importance and practice of budgeting, and managing risk.

Topics in RE will include but not limited to:

- Where do we look for God?
- What does justice mean to Christians?
- Religious figure (generic)
- Who was Gotama Buddha?
- What are we doing to the environment?
- What does Jesus' Incarnation mean for Christians today?
- What does the Resurrection of Jesus mean for Christians today?
- Beliefs and practice (generic)
- Beliefs and practice: how do the beliefs of Sikhs affect their actions?
- A visit to a place of worship (generic)
- What makes a gurdwara special to Sikhs?
- Where are we going? Rites of passage
- Where did the universe come from?
- Why do we suffer?
- Why are some places special to religious believers?

The pupils will learn through first hand experience where possible – visits from guest speakers and visits to specific places of worship.

Pupils will continue to develop an understanding of the importance of creating a community that works in harmony. This will include an exploration of:

- Forgiveness
- Fairness
- Love/friendship
- Empathy/compassion
- Respect/tolerance
- Awe and wonder
- Right and wrong
- Respect and value for the views and opinions of other faiths
- Respect for the right of others to hold their own religious views without ridicule or embarrassment
- Recognition that everybody is unique and has something to offer
- Appreciation for the impact that beliefs, values and traditions have on lifestyle

Art and Design

Pupils will be taught to develop their creativity and ideas, and increase proficiency in their execution. They should develop a critical understanding of artists, architects and designers, expressing reasoned judgements that can inform their own work.

Pupils will be taught:

- to use a range of techniques to record their observations in sketchbooks, journals and other media as a basis for exploring their ideas
- to use a range of techniques and media, including painting
- to increase their proficiency in the handling of different materials
- to analyse and evaluate their own work, and that of others, in order to strengthen the visual impact or applications of their work
- about the history of art, craft, design and architecture, including periods, styles and major movements from ancient times up to the present day.

Topics will include:

- Self-image
- What's in a building?
- Recreating landscapes
- Objects and viewpoints
- Animating art
- Shared view
- Life events
- Change your style
- Personal places, public spaces – students to visit two very different art galleries/spaces

Students should study the works of two contrasting artists.

Computing

Pupils will be taught to:

- design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
- understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem
- use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions
- understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]
- understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems
- understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits
- undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users
- create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability
- understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.

Design and Technology

When designing and making, pupils will be taught to:

Design

- use research and exploration, such as the study of different cultures, to identify and understand user needs
- identify and solve their own design problems and understand how to reformulate problems given to them
- develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
- use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses
- develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools

Make

- select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture
- select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties

Evaluate

- analyse the work of past and present professionals and others to develop and broaden their understanding
- investigate new and emerging technologies
- test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups
- understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists

Technical knowledge

- understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- understand how more advanced mechanical systems used in their products enable changes in movement and force

- understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]
- apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].

Cooking and Nutrition

Pupils will be taught to:

- understand and apply the principles of nutrition and health
- cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet
- become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes]
- understand the source, seasonality and characteristics of a broad range of ingredients.

Music

Pupils will be taught to:

- play and perform confidently in a range of solo and ensemble contexts using their voice, playing instruments musically, fluently and with accuracy and expression
- improvise and compose; and extend and develop musical ideas by drawing on a range of musical structures, styles, genres and traditions
- use staff and other relevant notations appropriately and accurately in a range of musical styles, genres and traditions
- identify and use the inter-related dimensions of music expressively and with increasing sophistication, including use of tonalities, different types of scales and other musical devices
- listen with increasing discrimination to a wide range of music from great composers and musicians
- develop a deepening understanding of the music that they perform and to which they listen, and its history.

Pupils will experience live music on a regular basis – plan for and look out for free London concerts experiences.

Languages

The children will be taught French and Latin and be given the opportunity to learn another language of their choice from a range offered.

We will teach the pupils to:

Grammar and vocabulary

- identify and use tenses or other structures which convey the present, past, and future as appropriate to the language being studied
- use and manipulate a variety of key grammatical structures and patterns, including voices and moods, as appropriate
- develop and use a wide-ranging and deepening vocabulary that goes beyond their immediate needs and interests, allowing them to give and justify opinions and take part in discussion about wider issues
- use accurate grammar, spelling and punctuation.

Linguistic competence

- listen to a variety of forms of spoken language to obtain information and respond appropriately
- transcribe words and short sentences that they hear with increasing accuracy

- initiate and develop conversations, coping with unfamiliar language and unexpected responses, making use of important social conventions such as formal modes of address
- express and develop ideas clearly and with increasing accuracy, both orally and in writing
- speak coherently and confidently, with increasingly accurate pronunciation and intonation
- read and show comprehension of original and adapted materials from a range of different sources, understanding the purpose, important ideas and details, and provide an accurate English translation of short, suitable material
- read literary texts in the language [such as stories, songs, poems and letters], to stimulate ideas, develop creative expression and expand understanding of the language and culture
- write prose using an increasingly wide range of grammar and vocabulary, write creatively to express their own ideas and opinions, and translate short written text accurately into the foreign language.

Logic and Reasoning

The pupils will be taught to develop and extend their memory as well as become good at solving logic problems and puzzles. We will encourage and support them to acquire the essential skills and strategies and understand how and when to use them.

When solving logic problems and puzzles, the following strategies will be taught:

- Identifying carefully what is known and what needs to be found and thinking about how they might relate
- Looking through the information that is given for any relationships or patterns that can be developed and used
- Developing a line of thinking that involves making inferences and deductions, for example 'if I know that then this could or must be true', and testing these out against the given information
- Taking one piece of the information and changing it, while keeping everything else fixed, to see what effect it has on the problem
- Choosing a way of recording and organising the given information that helps to see how the problem is structured
- Checking answers along the way to see if they satisfy the conditions or rules

Physical Education

Pupils will be taught to:

- use a range of tactics and strategies to overcome opponents in direct competition through team and individual games [for example, badminton, basketball, cricket, football, hockey, netball, rounders, rugby and tennis]
- develop their technique and improve their performance in other competitive sports [for example, athletics and gymnastics]
- perform dances using advanced dance techniques within a range of dance styles and forms
- take part in outdoor and adventurous activities which present intellectual and physical challenges and be encouraged to work in a team, building on trust and developing skills to solve problems, either individually or as a group
- analyse their performances compared to previous ones and demonstrate improvement to achieve their personal best
- take part in competitive sports and activities outside school through community links or sports clubs.

