

YEAR 7		Description	Levels covered	Skills & content covered	Skills & content revisited
SCIENCE					
UNIT 1	The Human body	In this unit pupils will explore the content of a healthy human diet: carbohydrates, fats, proteins, vitamins, minerals, dietary fibre and water, and why each is needed. They will be required to carry out calculations of energy requirements in a healthy daily diet in addition to studying the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. Pupils will also study 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). Pupils will also explore the importance of bacteria in the human digestive system. This unit also covers the skeletal and muscular system. Pupils will learn the interaction between skeleton and muscles, including the measurement of force exerted by different muscles.	3 to 8	Food groups / diet (healthy and unhealthy) / digestion / absorption/Skeletal and muscular system/gas exchange and breathing/alveolus/respiration/condensate/contract/trachea/biomechanics/ribcage/lung volume/ligament.	The aim will be to interpret observations to identify patterns in the data. The energy in food practical will incorporate data analysis from the different food groups and results will be recorded in a table. They will conclude the experiment by using the information from the experiment to suggest different diets. The experiment will be evaluated to describe what could be done to improve it.
UNIT 2	Elements and compounds	Unit covers aspects of fundamental chemistry about atoms, elements, compounds and how to write chemical formulae. They will 'pupils should learn that formulae indicate the (relative) numbers of atoms in a compound. Pupils will represent elements by symbols and compounds by formulae. Students will study about the different materials there. They will explore what elements are made from, the properties and how we get all the other materials. They will study how we can represent the changes when new materials are made.	3 to 8	Atoms/Elements/Compounds/chemical formulae/chemical symbol/ periodic table/molecule.	Interpret observations and data, including identifying patterns and using observations. The students will present reasoned explanations based on their observations of the diagrams describing whether they are atoms, elements or compounds. Measurements and data from the research of the structures will be used to draw conclusions.
UNIT 3	Forces 1	Unit covers aspects of forces which include forces at a distance as well as balanced and unbalanced forces. The students will find out where they can come across forces and how forces can act on objects. - How do things balance. They will study forces and their effects - How do different materials stretch? The unit explores what friction does, Where do we come across forces and why things float. Hooke's law as a special case will be investigated.	3 to 8	Forces/squashing forces/friction forces/gravitational forces/push/pull/non-contact/newtonmeter/weight/deform/compress/equilibrium.	Collecting data by using a newton metre to measure the forces on different objects. They will use data analysis when investigating Hooke's law and interpretation/collecting data, graphical representation. A prediction will be made to test the effects of friction and design an investigation, record measurements and analyse what the results show.
UNIT 4	Cells	The unit covers components of cells and the differences between plants and animal cells, how cells can be specialised and respiration. They will describe different levels of hierarchical organisation with regards to unicellular and multicellular organisation. They will describe how cells are adapted for different functions. Pupils should learn that plant and animal cells have a cell surface membrane which keeps the cell together and controls what enters and leaves; that cells have a cytoplasm which occupies most of the cell; that cells have nuclei which control activities of the cell. Students will learn how to interpret, observe and record cell structure using a light microscope.	3 to 8	Plant/animal cells/ hierarchical organisation/Multicellular/unicellular/specialised organisms/ aerobic /anaerobic /microscope/respiration/diffusion/microscope/sperm cell/concentration/root hair cells/euglena/flagellum/sperm cell/egg /light microscope.	Using appropriate techniques in using the microscope as an apparatus for observing the plant and animal cell organelles. Interpretation and observation of the results seen in the diffusion experiment with the agar cube. Working safely in the laboratory during practical work.
UNIT 5	Acids and alkalis	This unit covers acids and alkalis and how to neutralise substances and make salts. Students will learn about acids and alkalis and where to use them. They will learn how acids and alkalis can be identified and distinguished from each other? What happens when an acid is added to an alkali? Where is neutralisation important? Bases should be emphasized and studied in detail.	3 to 8	Acids/alkalis/salts/neutralisation/indicators/Ph scale/hazard/alkaline solution/litmus/universal indicator.	Evaluate risks when testing the different substances to see whether they are acids or alkalis. Observation of difference hazard symbols and the precautions to take when using them. Planning an investigation to determine which indigestion remedy works the best. The results will be analysed data analysis and interpretation/collecting data, graphical representation.

UNIT 6	Energy	Pupils will also study the range of fuels used domestically and in industry. Pupils will describe how renewable energy resources can be used to generate electricity and provide heating. Pupils will compare the advantages and limitations of a range of energy resources. In this unit pupils will carry out a number of calculations of fuel uses and costs in the domestic context. They will compare the energy values of different foods and explain data on food intake and energy requirements for a range of activities. They will also compare the amounts of energy transferred in various appliances in watts and evaluate the different power ratings of appliances.	3 to 8	Energy, joule, kilojoule, law of conservation of energy, chemical store, thermal, kinetic, gravitational, potential, elastic, dissipated, equilibrium, conduction, convection, radiation, insulator, convection current, infrared radiation, thermal imaging, energy resource, fossil fuel, non-renewable, thermal power station, renewable, power rating, watt, kilowatt, kilowatt hour, work, simple machine, lever gear.	evaluate a fair comparison of the energy output of different fuels and foods, including the control of relevant variables • find information from selected secondary sources about fuels and energy devices. • also select secondary sources to provide information about the use of fuels or other energy sources.
UNIT 7	Particles	In this unit pupils study the properties of the different states of matter (solid, liquid, and gas) in terms of particle model, exploring the differences in arrangement, motion and density. Pupils will study the conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation and dissolving. Pupils will also explore how diffusion in liquids and gases is driven by differences in concentration with specific focus on Brownian motion in gases. Pupils will also use the particle model to explain gas pressure and describe the factors that affect gas pressure. Pupils will delve into a simple atomic model and identify differences between atoms, elements and compounds. Lastly the unit covers the basis of chemical symbols and formulae for elements and compounds.	3 to 8	Material, particle, mixture, substance, property, solid, liquid, gas, states of matter, melting, change of state, freezing, melting point, boiling, boiling point, conserve, evaporation, condensation, sublimation, diffusion, collide, gas pressure.	select effectively information from secondary sources to compare methods of preventing heat loss in houses • collect and interpret temperature data from a substance changing state make systematic measurements of temperature changes with a precision which enables reliable conclusions to be drawn in an investigation of insulators • evaluate different sources of information on domestic heat loss prevention methods • extrapolate from temperature data on change of state
UNIT 8	Pure and impure substances	In this unit pupils will explore the concept of a pure substance. Pupils will classify some solids as soluble or insoluble and explain the meaning of the term 'saturated solution'. Pupils will also describe how mixtures can be separated by distillation and chromatography and will use the particle model to explain what happens when a solid dissolves in water, explaining why mass is conserved. Pupils will also describe how pure water can be obtained from sea water and how different colours can be separated from some inks. Pupils will also explore other simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography.	3 to 8	Mixture, pure, impure, solution, dissolve, solvent, solute, saturated, solution, solubility, soluble, insoluble, filtration, filtering, residue, filtrate, distillation, chromatography, chromatogram.	make measurements of temperature and mass • present experimental results as line graphs, pointing out patterns • describe observations and explain these • identify patterns in data about solubility, and make predictions from these • interpret data from chromatograms • use scientific knowledge and understanding to plan how to separate pure salt from rock salt.
UNIT 9	Waves	In this unit pupils will describe the different types of waves and their features. Pupils will relate changes in pitch and loudness of sounds to changes in vibrations and relate these to the oscilloscope representations of waves. Pupils will recognise that sound needs a medium to travel through and that it travels at different speeds through different media. They will explain simply how the ear works and use a model of the ear to discuss possible causes of hearing impairment. Pupils will be required to give examples of hearing ranges and explain how noise pollution can be reduced. Pupils will also relate pitch to frequency of sounds and loudness to amplitude and use the particle theory to explain how sound travels through materials. Additionally, pupils will discuss the applications of sound waves in medicine and the use of sound waves for navigating.	3 to 8	Oscillation, vibration, energy, undulation, sound, amplitude, frequency, wavelength, peak, crest, trough, transverse, longitudinal, compression, rarefaction, reflection, incident wave, reflected wave, superpose, medium, vacuum, pitch, oscilloscope, hertz, kilohertz, audible range, infrasound, ultrasound, pinna, auditory canal, ossicle, oval window, cochlea, auditory nerve, decibel, diaphragm, amplifier, reverberation.	identify patterns in qualitative data about sound and describe sound qualities; frame a question about hearing which can be investigated; identify and control key variables; identify limitations in their data; compare sound levels, and report on a loudness enquiry; describe a current issue related to sound.

UNIT 10	Light	This unit covers the similarities and differences between light and waves in matter. Pupils will explore how light waves travels through a vacuum as well as the transmission of light through materials by investigating absorption, diffuse scattering and specular reflection at a surface. Pupils will explain the origin of colour and the different frequencies of light whilst also studying differential colour effects in absorption and diffuse reflection. Pupils will also make use of the ray model to explain imaging in mirrors, specifically focusing on the pinhole camera, exploring how a camera forms an image and divulging further into the anatomy of the human eye, explaining how light is refracted and focused by the action of convex lenses. Additionally pupils will study how light transfers energy from a source to an absorber and explain how this leads to chemical and electrical effects.	3 to 8	Luminous, non-luminous, transparent, opaque, emit, absorb, reflect, vacuum, specular reflection, diffuse scattering, angle of incidence, angle of reflection, medium, refraction, convex, converging, focal, photoreceptor, optic nerve, retina, cornea, iris, pixels, prism, spectrum, dispersion.	make predictions about the reflection of light at plane surfaces, measure angles with precision and make generalisations from the data; frame a question about light and colour and plan how to investigate it. ; identify patterns in angular measurements of reflected rays of light. make predictions about image formation using the law of reflection or the patterns of behaviour from refraction;
UNIT 11	Plants	This unit covers how plants grow and the role of the leaf in photosynthesis. Students will learn about what happens to the glucose produced in leaves. They will explore why green plants are important in the environment. The unit covers leaves, photosynthesis, dispersal and pollination. Pupils should learn about the products of photosynthesis and how plants respire. They will learn about the role of the root and adaptations of the leaves in photosynthesis.	3 to 8	Plants/chlorophyll/leaves/chloroplasts/photosynthesis/starch/glucose/carbondioxide/pollination/seed dispersal/chemosynthesis.	Investigative enquiry when observing the structure of the structure of the leaf for stomata, starch etc. Using appropriate equipment when doing the experimtn for starch in a leaf and investigating the effect of light on the rate of photosynthesis. A conclusion and evaluation of all experiments. Numeracy will be used to record data accordingly and counting the bubbles of oxygen gas given off.
UNIT 12	Earth Science	The unit states that in scientific enquiry pupils will consider how evidence from sedimentary layers and from fossils has led to changes in ideas about the development of the Earth. They will study the rock cycle - 'how the rock cycle provides a continuous supply and transformation of Earth materials. The students will learn about the distinguishing features of the the three types of rocks and their uses. The unit also covers weathering, erosion, transportation and the rock cycle. A lesson should be focused on changes to the Earth's atmosphere and the carbon cycle. The unit covers human activity and the natural processes can lead to changes in the environment.	3 to 8	sedimentary/igneous/metamorphic/erosion/weathering/compaction/rock cycle.	Investigative enquiry will be used to determine the physical properties of sedimentary, igneous and metamorphic rocks. They will participate in utilising information to make a model of sedimentary rocks. They will review analytical skills when using chocolate to make a model of the rock cycle-The choc cycle.