

Science Curriculum- Year 8

Year 8	HT1	HT2	HT3	HT4	HT5	HT6
Topic	Food & digestion Periodic table	Light Breathing & respiration	Fluids Plants & their reproduction	Combustion Energy transfers Metals & their uses.	Unicellular organisms Space	Rocks
Why this and why now?	Food & digestion builds on previous topics from year 7 such as cells. This topic introduces the fundamental nutrients needed for a healthy 'diet'. Periodic table builds on 7H recapping some of the fundamental key points, it introduces atomic model & takes a look at physical & chemical properties providing a foundation for other chemistry topics.	Light builds on KS2 knowledge of basic light, extending this to how it changes whilst travelling through different materials, this builds on the waves topic from last year. Breathing & respiration builds mainly on 7C, this goes into further detail on gas exchange not only in humans but other organisms	Fluids builds mainly on 7G, it explores further the effects of fluids. Plants & their reproduction builds on previous topics from Yr7 such as reproduction & inherited variation, this topic introduces pollination & explores how variation works in plants.	Combustion this builds on prior learning from year 7 topic Atoms, elements & compounds, introduces metals and non-metals ready for the next chem topic, it also looks at global warming & the products. Energy transfers builds on from 7I & fluids by looking at energy transfers. Metals & their uses builds upon previous topics, it uses prior learning to introduce physical & chemical properties of metals.	Unicellular organisms follow on from mainly 7A, this topic introduces unicellular cells along with cons & uses. Space builds on from basic KS2 knowledge, introduces seasons & night/day, it also builds on 7K topic.	Rocks builds on 7H and introduces different types of rocks and how they are formed as well as the importance of recycling natural materials.
What is the essential knowledge that needs to be remembered?	Food & digestion the human diet and why they are needed. The digestive system is also covered in some detail, and the idea of enzymes is introduced. Periodic table matter, atoms and chemical and physical change. Students then look at using the trends in the periodic table to make predictions about physical and chemical properties of elements and their compounds.	Light how light travels and what happens when it meets an object. The unit is set in the context of stage, film and illusions. Breathing & respiration gas exchange in humans and other organisms, together with details of aerobic and anaerobic respiration in humans.	Fluids changes of state, and then goes on to look at fluids and some of their effects, including pressure, floating and sinking, and drag. Plants & their reproduction reproduction in plants, both sexual and asexual, although the former is of chief importance. Classification and biodiversity are also covered.	Combustion combustion and oxidation reactions, including those of hydrocarbons, metals and non-metals. Exothermic reactions and pollution of the air by the products of fossil fuel combustion. Impact of global warming and methods for controlling carbon dioxide emissions. Energy transfers energy transfers by heating in the context of homes. Metals & their uses. physical properties of metals & their main chemical properties. Reactions occur at different speeds & general reactivity series of metals.	Unicellular organisms what unicellular organisms are, the differences between different types, their problems and their uses. Space the seasons and the Earth's magnetic field and gravity. It also looks at the Solar System and what is beyond the Solar System. The theme is exploring the Solar System – in terms of observations and the use of models as well as via astronauts and space probes.	Rocks different types of rock and the processes that bring about their formation, leading to the idea of a rock cycle that operates within a huge geological timescale. It also looks at the Earth as a source of resources and the advantages of recycling metals. The unit is set in the context of natural disasters.

<p>What is the assessment intent and how will you assess?</p>	<p>Year 8 Baseline – this assesses Science knowledge, skills and understanding from KS2 as well as year 7.</p> <p>End of topics test to be set in class, active learn tasks to be set for homework which are low stake quizzes, as well as weekly memory retrieval quizzes in lessons to identify any gaps or weaknesses</p>	<p>Assessment 1 –this assessment is a cumulative assessment that uses questions based on all topics taught so far. Extended answer questions as well as short answer, discuss and compare questions.</p> <p>End of topics test to be set in class, active learn tasks to be set for homework which are low stake quizzes, as well as weekly memory retrieval quizzes in lessons to identify any gaps or weaknesses</p>	<p>End of topics test to be set in class, active learn tasks to be set for homework which are low stake quizzes, as well as weekly memory retrieval quizzes in lessons to identify any gaps or weaknesses</p>	<p>Assessment 2– this assessment is a cumulative assessment that uses questions based on all topics taught so far. Extended answer questions as well as short answer, discuss and compare questions.</p> <p>End of topics test to be set in class, active learn tasks to be set for homework which are low stake quizzes, as well as weekly memory retrieval quizzes in lessons to identify any gaps or weaknesses</p>	<p>End of topics test to be set in class, active learn tasks to be set for homework which are low stake quizzes, as well as weekly memory retrieval quizzes in lessons to identify any gaps or weaknesses</p>	<p>Assessment 3– this assessment is a cumulative assessment that uses questions based on all topics taught so far. Extended answer questions as well as short answer, discuss and compare questions.</p> <p>End of topics test to be set in class, active learn tasks to be set for homework which are low stake quizzes, as well as weekly memory retrieval quizzes in lessons to identify any gaps or weaknesses.</p>
<p>What should the end point look like?</p>	<p>Can describe a diet is, what the main nutrients consists off & why is it each needed. Calculate energy requirements. Explain the role of diffusion and discuss how organs in the human digestive system are adapted. Draw the atomic model, state the differences between atoms, elements and compounds, formulae and equations, periods and groups, metals & non-metals as well as their properties.</p>	<p>Identify similarities & differences between light and waves in matter, state what specular reflection & explain refraction of light and use ray model with examples. Independently discuss how light transfers energy and different frequencies of light colour. Explain the role of diffusion in cells, structure, function, mechanism and adaptations of the gas exchange system in humans. State the aerobic & anaerobic respiration as well as discuss the differences between the two. State the role of stomata.</p>	<p>Know atmospheric pressures & affecting factors. Explain solids, liquids & gases, different states relating this to density. Be able to explain & state the equation for photosynthesis, application of knowledge on reproduction in plants including flower structure. State and explain why insect pollination is important, how genetic information is inherited, the differences between species & variation.</p>	<p>State and explain thermal decomposition, oxidation & displacement reactions. Explain catalysts, endothermic and exothermic as well as the carbon cycle & impact of human CO₂ on the climate. Compare power ratings, energy transferred on domestic bills & access energy transfers. Recall formula, chemical symbols, equations & combustion. Explain thermal decomposition, oxidation & displacement reactions, reactions of acids plus a metal to produce a salt and hydrogen, state the order of metals & carbon in the reactivity series.</p>	<p>Unicellular organisms: Recall previous knowledge on cells/ microscopes/aerobic and anaerobic respiration, explain how life on earth depends mainly on photosynthesis, and discuss adaptations of some unicellular organisms. Space can identify non-contact forces acting on earth & space. Discuss Earth's magnetism, be able to work out weight on different planets. Independently be able to explain why we have night/day & different seasons.</p>	<p>Rocks state the composition & structure of the earth, discuss the rock cycle & formation of the three types of rocks. Explain limited resources & the efficacy of recycling.</p>

	<p>How does it cover the NC</p>	<p>Food & digestion 'Analysis & Evaluation', 'Nutrition & digestion' & 'Cells & organisation'. Periodic table 'Atoms, elements & compounds', 'Periodic table', 'Analysis & evaluation',</p>	<p>Light 'Light waves'. Breathing & respiration 'Cells & organisation', 'Gas exchange systems', 'Cellular Respiration', 'Scientific attitudes' & 'Analysis & evaluation'.</p>	<p>Fluids 'Forces', 'Pressure in fluids', 'Physical changes', 'Particle model', 'Energy in matter', 'Analysis & evaluation'. Plants & their reproduction 'Nutrition & digestion', 'Reproduction', 'Relationships in an ecosystem', 'Inheritance, chromosomes, DNA & genes', 'Experimental skills & investigations'</p>	<p>Combustion 'The particulate nature of matter', 'Atoms, elements & compounds', 'chemical reactions', 'Energetics', 'Earth & the atmosphere'. Energy transfers 'Calculation of fuels & costs in the domestic context', 'Energy changes & transfers', 'Changes in systems' & 'Scientific attitudes'. Metals & their uses. 'Atoms, elements & compounds', 'Pure & impure substances', 'Chemical reactions', 'The periodic table', 'Materials' & 'Experimental skills & investigations'.</p>	<p>Unicellular organisms 'Cells & organisation', 'Photosynthesis', 'Cellular respiration', 'Analysis & Evaluation'. Space 'Forces', 'Magnetism', 'Space physics' & 'Analysis & Evaluation'.</p>	<p>Rocks 'Earth & the atmosphere'.</p>
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