

Science – Year 10 Curriculum

Biology

Content (Intent)	Links to prior learning	Skills and Assessment (Implementation)	Expected Learning Outcomes (Impact)
<p>Terms 1: Cell Biology Microscopes Animal and Plant Cells Eukaryotic and Prokaryotic Cells Specialisation in cells Diffusion Osmosis Active Transport Cell Division Cell Differentiation Stem Cells Required Practical Using a light microscope</p> <p>Investigate the effect of concentrations on osmosis</p>	<ul style="list-style-type: none"> • Year 7 Cells Topic • Year 9 Fundamentals 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>To be able to explain the characteristics of cells, how to calculate magnification on a microscope, the differences between prokaryotic and eukaryotic cells and how stem cells can be used in human medicine</p>
<p>Term 2 and 3: Organisation Tissues and organs Digestive System and Digestion Enzymes Blood and the heart Breathing and Gas Exchange Evaporation Transpiration Required Practical Food tests</p>	<ul style="list-style-type: none"> • Year 7 Structure and function of body systems Topic • Y9 Rates of reaction (Chemistry) • Year 8 Health and Lifestyle topic 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>To be able to explain how are cells organised to be able to carry out functions of life, the types of cell division that forms gametes, how cells grow and divide, structures and functions of enzymes, essential adaptations of the lungs and the heart, evaporation and transpiration in plants.</p>

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The effect of pH on the rate of reaction of amylase			
<p>Term 3 and 4: Infection and Response Communicable diseases Disease prevention Infection response Vaccines Antibiotics and painkillers Drug discovery and development Non Communicable disease Cancer Smoking</p>	<ul style="list-style-type: none"> • Year 7 Cells Topic • Year 8 Health and Lifestyle topic 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>To be able to explain, what are communicable diseases, the how our bodies defend themselves from pathogens, what are non-communicable disease, how can our lifestyles affect our risk of non-communicable disease</p>
<p>Term 4 and 5: Bioenergetics Photosynthesis How plants use glucose Factors affecting photosynthesis Aerobic and anaerobic respiration Exercise and metabolism Required Practical The effect of light intensity on photosynthesis</p>	<ul style="list-style-type: none"> • Year 7 Structure and function of body systems Topic • Year 8 Health and Lifestyle topic • Year 8 Ecosystem Processes Topic 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>To explain how plants use the glucose that they make and the differences between aerobic and anaerobic respiration</p>
<p>Term 5: Homeostasis Homeostasis The nervous system Synapses and reflexes Required Practical Reaction time</p>	<ul style="list-style-type: none"> • Year 7 Structure and function of body systems Topic 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics.</p>	<p>To explain how our bodies respond to the world around us, why homeostasis is important and how do reflexes help us survive.</p>

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		Test includes multiple choice, structured, closed short answer, and open response questions	
Term 6: Revision, mocks and intervention	<ul style="list-style-type: none"> Exam practice and end of topic test in years 7, 8 and 9. 	Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths Skills Assessment: End of year assessment (past paper 1).	Use the best revision techniques in order to prepare for the exam, reflect on the exam performance and identify areas where you can improve.

Physics

Content (Intent)	Links to prior learning	Skills and Assessment (Implementation)	Expected Learning Outcomes (Impact)
Term 1: Forces and Vectors Vectors and Scalars Forces between objects Resultant Forces Centre of mass Parallelogram of forces Resolution of forces	<ul style="list-style-type: none"> KS2 Friction, magnetism attracting and repelling from a distance. Year 7 P1: Forces Topic Year 8 P3.6 Turning forces 	Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions	Explain the effect of forces, how they can be measured, and how the effects of forces are calculated
Term 1: Electromagnetism Magnetic fields Magnetic fields of electric current The motor effect	<ul style="list-style-type: none"> KS2 magnets attract and repel, which materials are magnetic. Year 7 Sound Topic 	Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy Assessment:	Explain the properties of magnetic fields and how electric motors work.

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	<ul style="list-style-type: none"> Year 8 1.6-1.8 magnets and electromagnets 	End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions	
Term 2: Revision of year 9 content Recap forces, motion, waves and electromagnetic waves.	<ul style="list-style-type: none"> Year 7 Forces Topic Year 7 Sound Topic Year 7 Light Topic Year 8 Motion and Pressure topic Year 9 motion graphs, forces and motion, waves and electromagnetic waves 	Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths, Literacy Assessment: Past Paper covering paper 2 content.	Use the best revision techniques in order to prepare for the exam, reflect on the exam performance and identify areas where you can improve.
Term 2 and 3: Conservation and Dissipation of Energy Energy changes Conservation of energy Work done Gravitational potential energy Kinetic energy Efficiency Appliances Power	<ul style="list-style-type: none"> Year 8 2.1 & 2.2 Energy in food and conservation of energy Year 8 2.7 & 2.8 work, energy and power 	Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions	Explain how energy is transferred between different stores, calculate the size of energy transfers, explain where energy goes after being used and how to calculate and improve efficiency.
Term 3: Heating Conduction Specific heat capacity Insulation Required Practical's Insulators Specific Heat Capacity	<ul style="list-style-type: none"> Year 8 2.3 – 2.5 energy, temperature and heat transfer 	Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice,	Explain how heat is transferred and the best methods of preventing these transfers. Specific Heat Capacity

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		structured, closed short answer, and open response questions	
<p>Term 4: Energy Resources Wind Energy Hydroelectric power Tidal Energy Wave Energy Solar Energy Geothermal Energy Fossil Fuels Nuclear power</p>	<ul style="list-style-type: none"> Year 8 2.2 conservation of energy & 2.6 Energy resources Year 10 P15 electromagnets 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>Explain how electricity can be generated and evaluate the impacts of each of these methods. Understand how enough energy is created for peak demand.</p>
<p>Term 4 and 5: Electrical Current Electric charges Current Potential difference Resistance Series Circuits Parallel Circuits Required Practical Investigating electrical components</p>	<ul style="list-style-type: none"> KS2 series circuits, higher voltage makes a bulb brighter Year 8 1.1 – 1.5 Electrical current 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>Explain the differences in series and parallel circuits and represent them with circuit diagrams. Calculate current. Resistance and potential difference for different types of circuit.</p>
<p>Term 5: Electricity in the home Alternating Current Cables and plugs Electrical power Electrical currents and charge Efficiency</p>	<ul style="list-style-type: none"> KS2 which appliances run on electricity Year 8 P1.1 – 1.5 electricity 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice,</p>	<p>Carryout electricity calculations to select the correct type of fuse and compare the efficiency of electrical devices, explain what alternating current is and where it's used.</p>

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		structured, closed short answer, and open response questions	
Term 6: Molecules and matter Density States of matter Changes of state Internal Energy Specific latent heat Gas Pressure Required Practical Calculating Densities	<ul style="list-style-type: none"> • KS2 solids, liquids and gases. Materials change state when heated. • Year 7 Particles and their behaviour topic. • Year 8 P3.3 – 3.5 pressure in solids, liquids and gases • Year 9 Atomic Structure(Chemistry) 	Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions	Explain the energy transfers and density changes when a substance changes state.

Chemistry

Content (Intent)	Links to prior learning	Skills and Assessment (Implementation)	Expected Learning Outcomes (Impact)
Term 1: C1 and C2 Recap States of matter Atomic Structure Electronic configuration Ions and Isotopes History of the atom Periodic Table History of the periodic table Group 1 Group 7	<ul style="list-style-type: none"> • Year 7 Particles and their behaviour topic. • Year 7 Atoms, elements and compounds topic. • Year 8 Separating Mixtures topic • Year 8 Periodic Table Topic 	Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions	Describe the structure of an atoms, use the periodic table to find the number of subatomic particles, draw the electron configuration for the first 20 elements and explain how the ideas of atomic. Explain how the periodic table is arranged and how this has changed over time. Explain the trends in reactivity of group 1 and group 7, giving examples of reactions of these elements.

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<p>Term 1: Bonding Ionic Bonding Ionic Structure and Properties Covalent Bonding Simple Covalent Molecules Giant Covalent Structures Metallic Structure and Bonding Alloys</p>	<ul style="list-style-type: none"> • Y9 Chemistry (Atomic structure and the periodic table) • Year 8 Periodic Table topic 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>Describe and explain the properties ionic, covalent and metallic substances with reference to their structure and bonding.</p>
<p>Term 2: Calculations Relative Formula Mass (Mr) Moles Reacting Masses Concentration</p>	<ul style="list-style-type: none"> • Y9 Chemistry (Atomic structure and the periodic table) • Year 8 Periodic Table Topic 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>Use the periodic table to calculate relative formula masses, moles, concentrations and reacting masses in chemical equations.</p>
<p>Term 3: Chemical Changes Reactivity series Extracting metals from ores Acids and metals Acids and Alkalis Acids and Bases Strong and weak acids Required Practical Preparing a pure dry salt</p>	<ul style="list-style-type: none"> • Y9 Chemistry (Atomic structure and the periodic table) • Year 8 Metals and Acids Topic • Year 8 Periodic Table topic 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>Explain how the reactivity series was devised and use the position of a metal on the reactivity series to explain how it is extracted from its ore. Understand the reactions and properties of acids, alkalis and bases. Explain what pH is a measure of</p>

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<p>Term 3 and 4: Electrolysis Electrolysis Electrolysis of solutions Electrolysis of brine Extraction of aluminium Required Practical Investigation the electrolysis of a solution</p>	<ul style="list-style-type: none"> Y9 Chemistry (Atomic structure and the periodic table) 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>Explain how electrolysis is used to breakdown ionic compounds and predict the products if the electrolysis of molten substances and solutions. Explain the uses of electrolysis in the electrolysis of brine and extraction of aluminium.</p>
<p>Term 4 and 5: Energy Changes Endothermic and Exothermic Reactions Uses of Endo and Exothermic reactions Bond Energy Calculations Reaction Profiles Required Practical Investigating temperature changes in reacting solutions</p>	<ul style="list-style-type: none"> Y9 Chemistry (Atomic structure and the periodic table) 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths skills, literacy</p> <p>Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions</p>	<p>Explain the differences between exothermic and endothermic reactions including their uses and reaction profiles. Use bond energy data to calculate the energy transferred during a chemical reaction.</p>
<p>Term 6: Revision, mocks and intervention</p>	<ul style="list-style-type: none"> Exam practice and end of topic test in years 7, 8 and 9. 	<p>Skills: Practical Skills, Exam Skills, Subject Knowledge, Maths Skills</p> <p>Assessment: End of year assessment (past paper 1).</p>	<p>Use the best revision techniques in order to prepare for the exam, reflect on the exam performance and identify areas where you can improve.</p>

Resources and/or activities to support learning

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Type of resource	Where to find it	Why?
Revision notes and past paper questions by topic	Physics and Maths tutor https://www.physicsandmathstutor.com/biology-revision/gcse-aqa/ Save My Exams https://www.savemyexams.co.uk/gcse/biology/aqa/18/	It saves you time making your own revision notes. Answering questions allows you to apply what you have learned and identify gaps in your knowledge. Also has notes on the required practicals
PiXL KnowITs and GraspITs	Teams	KnowITs contain revision notes and fact recall questions to check your knowledge. GraspITs are exam-style questions that allow you to apply your knowledge
Revision videos/pods	Cognito on Youtube https://youtube.com/playlist?list=PLidqqIGKox7X5UFT-expKluR-i-N3Q1g GCSE pod www.gcsepod.com FreeScienceLessons.co.uk	Quick summaries of the content that you can watch/listen to if you are more of a visual/aural learner
Revision notes	CGP Combined Science revision guide (Higher and Foundation versions can be purchased from Amazon)	A good resource to go over the content, look up areas you are unsure about