

YEAR 7 Curriculum Overview

YEAR 7	Autumn	Spring	Summer
Key Concepts Biology	Enquiry processes: Asking Scientific questions Planning investigations Collecting data, recording and presenting data, analysing and evaluating data Organisms <i>Movement</i> Levels of organisation The skeleton Movement: joints/muscles Organisms <i>Cells</i> Observing Cells Plant and animal cells Specialised Cells Movement of Substances Uni-cellular organisms	Ecosystems <i>Interdependence</i> Food chains and webs Disruption to food chains Ecosystems, Competition	Plant reproduction Flowers and pollination Fertilisation and germination Seed dispersal Genes <i>Variation</i> Continuous and discontinuous Adapting to change <i>Human reproduction</i> Adolescence Reproductive systems Fertilisation and implantation Development of a foetus The menstrual cycle Genes <i>Variation</i> Differences between species Continuous and discontinuous Adapting to change School Big Bang fair

Key Concepts Chemistry	Matter <i>Particle model</i> The particle model, States of matter Melting and freezing Boiling More changes of state Diffusion Gas pressure Inside particles Matter <i>Separating mixtures</i> Pure substances and mixtures Solutions Solubility Filtration Evaporation and distillation Chromatography	Reactions <i>Acids and Alkalis</i> Chemical reactions Indicators and pH Acid strength Neutralisation Making salts Reactions <i>Metals and non-metals</i> More about elements Chemical reactions of metals and non-metals Metals and acids/oxygen Metals and water Metal displacement reactions	Earth <i>Universe</i> The night Sky The Solar System The Earth structure and composition The Moon and changing ideas School Big Bang fair
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Key Concepts Physics	Forces <i>Speed</i> Balanced and unbalanced forces Distance-time graph <i>Gravity</i> Electromagnets <i>Potential difference and resistance</i> Series and parallel circuits <i>Current</i> <i>Charging up</i>	Electromagnets Charging up Current Series and parallel circuits Resistance Potential difference Electromagnets <i>Magnetism</i> Magnets and magnetic fields <i>Electromagnets</i> Using electromagnets	Energy Food and fuels Energy resources Energy and power Energy adds up Energy dissipation
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Practical Investigations	• How to measure • How to use different equipment • Dissecting a chicken • Melting and freezing • Boiling water • Diffusion • Filtration • Chromatography • Evaporation • Distillation • Using a Newton meter • Making a parachute • Balancing forces • Measuring speed, measuring voltage, gravity cups, • Parallel and series circuits • Static electricity	• pH indicators • Testing simple acids and alkalis • Reactions of ant-acids • Making crystals • Burning magnesium • Reaction of metals in acid • Reaction of metals in water • Investigating animals/plants in the yard/park • Energy labels • Transfer of energy using a burning candle/bouncing ball • Energy resources • Investigating power ratings of household appliances	• Dissecting different plants and flowers • Investigating pollen • Investigating wind dispersal, sycamore seeds and dandelion • Phases of moon • Heating water with different fuels • Energy of appliance • Energy associated with foods
Key Assessment Focuses	Baseline Assessment • Pupils will complete a baseline assessment in the first few weeks of year 7 to assess knowledge from KS2. They will also learn about the uses of some basic laboratory equipment and how to conduct experiments effectively to obtain valid results. Summative Assessment • End of chapter test for each topic • Tests after every Unit • End of Term test: Tests are designed to work towards AQA Style Exam Problems • End of year exam Formative Assessment • Extended Written Answer Question • Practical Investigation Write up • Questioning Feedback • Self-assessment and peer-assessment		

Working Scientifically	Pupils will have the opportunity to develop the following skills: • Work with accuracy, precision, repeatability and reproducibility • Understand that scientific theories develop as earlier explanations are modified to take account of new evidence and ideas • Evaluate risks in practical work • Ask questions and develop a line of enquiry based on observations of the real world • Make a prediction or hypothesis 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 • Apply sampling techniques • 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 • Use SI units (e.g., m, cm, mm) and chemical symbols & formula
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YEAR 8 Curriculum Overview

YEAR 8	Autumn	Spring	Summer
Key concepts Biology	Organisms <i>Breathing</i> Gas exchange Breathing Drugs Alcohol Smoking Organisms <i>Digestion</i> Nutrients Food tests Unhealthy diet Digestive system Bacteria and enzymes in digestion	Ecosystems <i>Interdependence</i> <i>Respiration</i> Aerobic respiration Anaerobic respiration Biotechnology <i>Photosynthesis</i> Leaves Plant materials Earth <i>Earth Structure</i> Sedimentary rocks Igneous and metamorphic rocks The rock cycle, ceramics	School Big Bang fair
Key concepts Chemistry	Matter Elements, Atoms and Compounds Chemical formulae Polymers <i>Periodic table</i> The elements of group 1 The elements of group 7 The elements of group 0 Reactions <i>Types of reaction</i> Atoms in chemical reactions Combustion Thermal decomposition	Reactions <i>Types of reaction</i> Conservation of mass <i>Chemical energy</i> Exothermic and endothermic Energy level diagrams Bond energies Catalysts	Earth <i>Earth Structure</i> Sedimentary rocks Igneous and metamorphic rocks The rock cycle, ceramics

			School Big Bang fair
Key concepts Physics	Forces <i>Contact forces</i> Friction and drag Squashing and stretching Turning forces <i>Pressure in gases</i> Pressure in gases/liquids Stress on solids	Energy <i>Work</i> Work, energy and machines <i>Heating and cooling</i> Energy and temperature Energy transfer: particles Energy transfer: radiation and insulation	Waves <i>Sound</i> Sound waves and speed Loudness and amplitude Frequency and pitch The ear and hearing Waves <i>Light</i> Reflection Refraction The eye and vision Colour School Big Bang fair
Practical investigations	- Designing an experiment - Writing a scientific article - Food tests - Enzyme reactions - Bell jar - Volume of lungs - investigating elements - Making a simple compound - Burning magnesium/methane spirit - Decomposition of copper carbonate - Investigation friction on different surfaces or books with an elastic band. - learning Hooke's law - investigating turning forces - Investigating a collapsing can - Using compass to draw magnetic field - Using iron filing to detect magnetic field - Making a simple electromagnet	- Investigating leaves - Detecting starch in leaves - Looking at stomata under a microscope - Rate of photosynthesis in pond weed - Exercise and breathing rate - Investigating anaerobic respiration - Yeast experiment - Making bread/yogurt - Conservation of energy - Energy and temperature of different substances - Investigating conduction, convection and radiation - Investigating levers - Investigating pulleys	- Vibration of a ruler - Echoes - Reflection and refraction - Making a colour wheel - Making periscope - Dissecting an eye

Key Assessment Focuses	Baseline Assessment • Pupils will complete a baseline assessment in the first few weeks of year 7 to assess knowledge from KS2. They will also learn about the uses of some basic laboratory equipment and how to conduct experiments effectively to obtain valid results. Summative Assessment • End of chapter test for each topic • Tests after every Unit • End of Term test: Tests are designed to work towards AQA Style Exam Problems End of year exam Formative Assessment Extended Written Answer Question Practical Investigation Write up Questioning Feedback • Self-assessment and peer-assessment
Working Scientifically	Pupils will have the opportunity to develop the following skills; Continue building on the Year 7 Working Scientifically skills and include: • Use appropriate techniques, apparatus, and materials laboratory work, paying attention to health and safety • Make and record observations and measurements for different investigations; and evaluate the reliability of methods and suggest improvements • • Apply mathematical concepts and calculate results • 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 results • Use and derive simple equations and carry out appropriate calculations

KS4	Autumn	Spring	Summer
Year 9 KEY CONCEPTS	Genes <i>Evolution</i> Natural selection Charles Darwin Extinction Genes <i>Evolution</i> Preserving biodiversity <i>Inheritance</i> DNA Genetics Genetic modification Cell structure and transport The world of microscope Animal and plant cell Eukaryotic and prokaryotic cells Specialisation in animal cell Specialisation in plant cells Diffusion	Osmosis Osmosis in plants Exchanging materials Cell division Cell division Growth and differentiation Stem cells Stem cell dilemmas Organisation and the digestive system Tissues and organs The human digestive system The chemistry of food Catalysts and enzymes Factors affecting enzyme system	How digestion works Making digestion work Organising animal and plant cells The blood The blood vessels The heart Helping the heart Breathing and gas exchange Tissues and organ in plants Transport systems in plants Evaporation and transpiration
Year 10 KEY CONCEPTS	Communicable Disease Health and disease pathogens and disease viral diseases Bacterial diseases Diseases by fungi and protists. Human defence systems Communicable diseases Pathogen and disease preventing infection viral and bacterial Diseases caused by fungi and protists. Human defence responses	Preventing and treating disease Vaccination antibiotics and pain killers Discovering and developing drugs non communicable disease Cancer, smoking diet and alcohol and other carcinogens Photosynthesis Photosynthesis Rate of photosynthesis how plants use glucose	Respiration Aerobic and anaerobic respiration Reponses to metabolism and the liver to exercise The human nervous system Principals of homeostasis Human nervous system Reflex action

Year 11 KEY CONCEPTS	Hormonal coordination Principals of hormonal growth Control of blood glucose treating diabetes Human reproduction Hormones and menstrual cycle Infertility treatments Reproduction Types of reproduction cell division in sexual reproduction DNA and genome inheritance in action genetics and inherited disorders Variation and evolution selective breeding and genetic engineering Ethics	Genetics and evolution Evidence for evolution fossils and extinction, antibiotic resistant bacteria, Classification Ecology The importance of communities Distribution and abundance Organisms in the environment competition in animals and plants Organising an ecosystem Feeding relationships materials and carbon cycle Biodiversity and ecosystems The human population explosion. Land and water pollution. Air pollution Deforestation and peat. Global warming Maintaining diversity	Revision Paper 1 / Paper 2 Required practical REVISION and EXAMS Exam type question
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Practical investigations	• Using a light microscope • Investigate the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue • Use standard food tests to identify food groups • Investigate the effect of pH on the rate of reaction of amylase enzyme • Investigate the effect of light intensity on the rate of photosynthesis • Investigate the effect of a factor on human reaction time • Measure the population size of a common species in a habitat
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Working Scientifically	Pupils will have the opportunity to develop the following skills: Scientific thinking by understanding: • the ways in which scientific methods and theories develop over time • using a variety of concepts and models to develop scientific explanations and understanding • appreciating the power and limitations of science and considering ethical issues which may arise • explaining every day and technological applications of science; evaluating associated personal, social, economic and environmental implications; and making decisions based on the evaluation of evidence and arguments • evaluating risks both in practical science and the wider societal context, including perception of risk • recognising the importance of peer review of results and of communication of results to a range of audiences. Experimental skills and strategies; • using scientific theories and explanations to develop hypotheses • planning experiments to make observations, test hypotheses or explore phenomena • applying a knowledge of a range of techniques, apparatus, and materials to select those appropriate both for fieldwork and for experiments • carrying out experiments appropriately, having due regard to the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations • recognising when to apply a knowledge of sampling techniques to ensure any samples collected are representative • making and recording observations and measurements using a range of apparatus and methods • evaluating methods and suggesting possible improvements and further investigations. Analysis and evaluation; • applying the cycle of collecting, presenting and analysing data, including: • presenting observations and other data using appropriate methods • translating data from one form to another

	• carrying out and representing mathematical and statistical analysis • representing distributions of results and making estimations of uncertainty • interpreting observations and other data, including identifying patterns and trends, making inferences and drawing conclusions • presenting reasoned explanations, including relating data to hypotheses • being objective, evaluating data in terms of accuracy, precision, repeatability and reproducibility and identifying potential sources of random and systematic error • communicating the scientific rationale for investigations, including the methods used, the findings and reasoned conclusions, using paper-based and electronic reports and presentations. Vocabulary, units, symbols and nomenclature; • developing their use of scientific vocabulary and nomenclature • recognising the importance of scientific quantities and understanding how they are determined • using SI units and IUPAC chemical nomenclature unless inappropriate • using prefixes and powers of ten for orders of magnitude (e.g. tera, giga, mega, kilo, centi, milli, micro and nano) • interconverting units using an appropriate number of significant figures in calculations.
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KS4	Autumn	Spring	Summer
Year 9 Key Concepts	Atoms, bonding and moles Chemical equations Separating mixtures Fractional distillation and paper chromatography History of the Atom Structure of the Atom Ions Atoms and isotopes , Electronic Structures Practical 6- calculate Rf values The Periodic table Development of the periodic table Electronic structures and the periodic table Group 1 – the alkali metals , Group 7 – the halogens , Explaining trends The transition elements	Structure and bonding States of matter Atoms into ions, Ionic bonding , Giant ionic structures Covalent bonding , Structure of simple molecules Giant Covalent structures Fullerenes and graphene , Bonding in metals Giant Metallic structures Nanoparticles Calculations Relative masses and moles	Equations and calculations From masses to balanced equations Expressing concentrations Chemical Changes , The reactivity series Displacement reactions Extracting materials Salts from metals Salts from insoluble gases , Making more salts Neutralisation and the pH scale Strong and weak acids
Year 10 Key Concepts	Chemical Changes , The reactivity series Displacement reactions Extracting materials Salts from metals Salts from insoluble gases , Making more salts, Neutralisation and the pH scale Strong and weak acids Electrolysis, Changes at the electrodes, The extraction of aluminium, Electrolysis of aqueous solutions Exothermic and endothermic reactions Using energy transfers from reactions	Reaction profiles and Bond energy calculations , Rates and equilibrium Collision theory and surface area The effect of temperature , The effect of concentration and pressure The effect of catalysts, Energy and reversible reactions , Dynamic equilibrium , Altering conditions Crude oil and Fuels Hydrocarbons	Fractional distillation of oil Burning hydrocarbon fuels Cracking hydrocarbons Chemical analysis

Year 11 Key Concepts	Fractional distillation of oil Burning hydrocarbon fuels Cracking hydrocarbons Chemical analysis The Earths atmosphere History of our atmosphere Our evolving atmosphere Greenhouse gases Global climate change Atmospheric pollutants Mock Exam 1	The Earth's Resources Finite and renewable resources Water safe to drink Treating waste water Extracting metals from ores Life cycle assessments Reduce, reuse, and recycle Atoms, bonding and moles Revisiting: Atomic structure The periodic table Structure and bonding Mock Exams 2	REVISION and EXAMS
Practical investigations	• Prepare a salt from an insoluble metal carbonate or oxide • Investigate the electrolysis of a solution • Investigate the electrolysis of a solution • Investigating temperature changes • Investigating the effect of concentration on rate of reaction • Calculate Rf values • Use chemical tests to identify unknown compounds • Purify and test water		

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Working Scientifically	Pupils will have the opportunity to develop the following skills: Scientific thinking by understanding:

	- the ways in which scientific methods and theories develop over time - using a variety of concepts and models to develop scientific explanations and understanding - appreciating the power and limitations of science and considering ethical issues which may arise - explaining every day and technological applications of science; evaluating associated personal, social, economic and environmental implications; and making decisions based on the evaluation of evidence and arguments - evaluating risks both in practical science and the wider societal context, including perception of risk - recognising the importance of peer review of results and of communication of results to a range of audiences. Experimental skills and strategies; - using scientific theories and explanations to develop hypotheses - planning experiments to make observations, test hypotheses or explore phenomena - applying a knowledge of a range of techniques, apparatus, and materials to select those appropriate both for fieldwork and for experiments - carrying out experiments appropriately, having due regard to the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations - recognising when to apply a knowledge of sampling techniques to ensure any samples collected are representative • making and recording observations and measurements using a range of apparatus and methods - evaluating methods and suggesting possible improvements and further investigations. Analysis and evaluation; - applying the cycle of collecting, presenting and analysing data, including: - presenting observations and other data using appropriate methods - translating data from one form to another - carrying out and representing mathematical and statistical analysis - representing distributions of results and making estimations of uncertainty - interpreting observations and other data, including identifying patterns and trends, making inferences and drawing conclusions - presenting reasoned explanations, including relating data to hypotheses - being objective, evaluating data in terms of accuracy, precision, repeatability and reproducibility and identifying potential sources of random and systematic error - communicating the scientific rationale for investigations, including the methods used, the findings and reasoned conclusions, using paper-based and electronic reports and presentations. Vocabulary, units, symbols and nomenclature; - developing their use of scientific vocabulary and nomenclature - recognising the importance of scientific quantities and understanding how they are determined - using SI units and IUPAC chemical nomenclature unless inappropriate - using prefixes and powers of ten for orders of magnitude (e.g. tera, giga, mega, kilo, centi, milli, micro and nano) - interconverting units using an appropriate number of significant figures in calculations.
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KS4	Autumn	Spring	Summer
Year 9 Key Concepts	Conservation and dissipation of energy Changes in energy stores Conservation of energy Energy and work Gravitational potential energy stores Kinetic energy and elastic energy stores Energy dissipation Energy and efficiency Energy and power Energy transfer by heating Energy transfer by conduction Specific heat capacity Heating and insulating buildings Energy resources Energy demands Energy from wind and water Power from the Sun and the Earth Energy and the environment Big Energy Issues	Electric circuits Current and charge Potential difference and resistance Component characteristics Series circuits Parallel circuits Electricity in the home Alternating current Cables and plugs Electrical power and potential difference Electrical currents and energy transfer Appliances and efficiency	Molecules and matter Density States of matter Changes of state Internal energy Specific latent heat Radioactivity Atoms and radiation The discovery of the nucleus, Changes in the nucleus, More about alpha, beta and gamma radiation, Activity and half-life
Year 10 Key Concepts	Molecules and matter Density States of matter Changes of state Internal energy Specific latent heat Electricity in the home Alternating current Cables and plugs Electrical power and potential difference Electrical currents and energy transfer Appliances and efficiency	Forces in balance Vectors and scalars Forces between objects Resultant forces Centre of mass The parallelogram of forces Resolution of forces Forces and motion Force and acceleration Weight and terminal velocity Forces and braking Momentum	The nature of waves The properties of waves Reflection and refraction More about waves Electromagnetic waves The electromagnetic spectrum Light, infrared, Microwaves and radio waves, Communications Ultraviolet waves, X-rays and gamma rays, X-rays in medicine

	Radioactivity Atoms and radiation The discovery of the nucleus, Changes in the nucleus, More about alpha, beta and gamma radiation, Activity and half-life	Forces and elasticity Motion Speed and distance-time graphs Velocity and acceleration More about velocity-time graphs Analysing motion graphs	
Year 11 Key Concepts	Weight and terminal velocity, Forces and braking , Momentum Forces and elasticity Electromagnetic waves The electromagnetic spectrum Light, infrared, Microwaves and radio waves, Communications Ultraviolet waves, X-rays and gamma rays, X-rays in medicine MOCK TESTS 1	Electromagnetism Magnetic fields Magnetic fields of electric currents The motor effect Revisiting: Conservation and dissipation of energy, Energy transfer by heating, Revisiting: energy resources, Electric circuits, Electricity in the home, MOCK TESTS 2	REVISION and EXAMS
Practical investigations	- Investigating Ripples in water Determining specific heat capacity - Investigating thermal insulators - Investigating resistance - Investigating electrical components - Calculating densities - Investigate the relationship between forces and extension for a spring - Investigate the relationship between force and acceleration - Investigating plane waves in a ripple tank and waves in a solid - Investigating infrared radiation		

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Working Scientifically	Pupils will have the opportunity to develop the following skills: Scientific thinking by understanding: • the ways in which scientific methods and theories develop over time • using a variety of concepts and models to develop scientific explanations and understanding • appreciating the power and limitations of science and considering ethical issues which may arise

	- explaining every day and technological applications of science; evaluating associated personal, social, economic and environmental implications; and making decisions based on the evaluation of evidence and arguments - evaluating risks both in practical science and the wider societal context, including perception of risk - recognising the importance of peer review of results and of communication of results to a range of audiences. Experimental skills and strategies; - using scientific theories and explanations to develop hypotheses - planning experiments to make observations, test hypotheses or explore phenomena - applying a knowledge of a range of techniques, apparatus, and materials to select those appropriate both for fieldwork and for experiments - carrying out experiments appropriately, having due regard to the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations - recognising when to apply a knowledge of sampling techniques to ensure any samples collected are representative • making and recording observations and measurements using a range of apparatus and methods - evaluating methods and suggesting possible improvements and further investigations. Analysis and evaluation; - applying the cycle of collecting, presenting and analysing data, including: - presenting observations and other data using appropriate methods - translating data from one form to another - carrying out and representing mathematical and statistical analysis - representing distributions of results and making estimations of uncertainty - interpreting observations and other data, including identifying patterns and trends, making inferences and drawing conclusions - presenting reasoned explanations, including relating data to hypotheses - being objective, evaluating data in terms of accuracy, precision, repeatability and reproducibility and identifying potential sources of random and systematic error - communicating the scientific rationale for investigations, including the methods used, the findings and reasoned conclusions, using paper-based and electronic reports and presentations. Vocabulary, units, symbols and nomenclature; - developing their use of scientific vocabulary and nomenclature - recognising the importance of scientific quantities and understanding how they are determined - using SI units and IUPAC chemical nomenclature unless inappropriate - using prefixes and powers of ten for orders of magnitude (e.g. tera, giga, mega, kilo, centi, milli, micro and nano) • interconverting units - using an appropriate number of significant figures in calculations.
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Curriculum Overview Separate Science options taught at the end of year 10 and beginning of year 11 Academic year 2022 – 2023

Separate science	Summer two (Year 10)	Autumn one	Autumn two	Spring one	Spring two	Summer one	Summer two
Biology Key Concepts	Communicable diseases Preventing and treating disease The Human nervous system	Homeostasis in action Controlling the body temperature Removing waste The human kidney Dialysis- an artificial kidney Kidney transplant Mock Exam Preparation	Reproduction Sexual and asexual reproduction DNA structure and protein synthesis Gene expression and mutation Variation and evolution Cloning Genetics and Evolution Theories of evolution Accepting Darwin's ideas Evolution and speciation	Organising an ecosystem Rates of decomposition Biodiversity and ecosystems The impact of change Trophic levels and biomass Biomass transfers Factors affecting food security Making food production efficient Sustainable Food production Mock Exam preparation	Revision of required practical's for separate science.	Revision for Exams Using exam style questions	EXAMS
Chemistry Key Concepts	C2.6 transition elements C3.11 Nanoparticles / C3.12 Applications of nanoparticles C4.4 The yield of a chemical reactions / C4.5 Atom economy	C4.7 Titration / C4.8 Titration calculation End of the year test End of the year test C4.9 Volumes of gases + Practical2 C7.5 Chemical cells and batteries / C7.6 Fuel cells C10.1 Reactions of alkenes C10.2 Structure of alcohol, carboxylic acids and esters C10.3 Reactions and uses of alcohol / C10.4 Carboxylic acids and esters	C11.1 addition polymerisation / C11.2 Condensation polymerisation C11.3 Natural polymers C11.4 C15 Using our resources , C15.4 Glass, ceramics and composites C12.4 Tests for positive ions / C12.5 Test for negative ions + practical 7	C15 Using our resources C15.1 Rusting / C15.2 Useful alloys, C15.3 properties of polymers C15.3 The properties of polymers / C15.4 C15.6 the economics of the harbor process C15.7 Making fertilisers in the lab / C15.8 Making fertilisers in industry C15.4 Glass, ceramics and composites C15.5 making ammonia /	REVISION C2 and C3 separate science revision C4 separate science revision	exams	exams

Physics Key Concepts	Energy transfer by heating Infrared radiation More about infrared radiation Electrical circuits Electrical changes and fields / P6.7 Gas pressure and volume P7.6 Nuclear radiation in medicine / P7.7 Nuclear fission P7.8 Nuclear fusion / P7.9 Nuclear issues	P8.4 Moments at work P8.5 More about levers and gears / P8.7 Moments and equilibrium P10.5 Using conservation of momentum / P10.6 Impact forces P10.7 Safety first P11.1 Pressure and surfaces / P11.2 Pressure in the liquid at rest P11.3 Atmospheric pressure / P11.4 Upthrust and flotation	P12.5 Sound waves/ P12.6 The uses of ultrasound/ P12.7 Seismic waves P14.1 Reflection of light / P14.2 Refraction of light P14.3 Light and colour + practical 9 P14.4 Lenses / P14.5 Using lenses Transformers in action MOCK TESTS 1	/ P15.3 Electromagnets in devices P15.5 The generator effect P15.6 The alternating-current generator P15.7 Transformers / P15.8	P2.2 Infrared radiation / P2.3 More about infrared radiation P4.1 Electrical charges and fields P6.6 Gas pressure and temperature	exams	exams
Practical investigations	Biology: - Investigating the effect of antiseptics or antibiotics on bacterial growth - Investigate the effect of light or gravity on the growth of newly germinated seedlings Chemistry: - Use titration to investigate reacting volumes - Use chemical tests to identify unknown compounds Physics: - Investigate the reflection and refraction of light						
Key Assessment Focuses	Baseline Assessment - Pupils will complete a baseline assessment in the first few weeks of year 7 to assess knowledge from KS2. They will also learn about the uses of some basic laboratory equipment and how to conduct experiments effectively to obtain valid results. Summative Assessment - End of chapter test for each topic - Tests after every Unit - Year 11 mock exams in January and March - Formative Assessment - Extended Written Answer Question - Practical Investigation Write up - Questioning Feedback - Self -assessment and peer-assessment						
Working Scientifically	Pupils will have the opportunity to develop the following skills: Scientific thinking by understanding: the ways in which scientific methods and theories develop over time						

- using a variety of concepts and models to develop scientific explanations and understanding
- appreciating the power and limitations of science and considering ethical issues which may arise
- explaining every day and technological applications of science; evaluating associated personal, social, economic and environmental implications; and making decisions based on the evaluation of evidence and arguments
- evaluating risks both in practical science and the wider societal context, including perception of risk
- recognising the importance of peer review of results and of communication of results to a range of audiences.

Experimental skills and strategies;

- using scientific theories and explanations to develop hypotheses
- planning experiments to make observations, test hypotheses or explore phenomena
- applying a knowledge of a range of techniques, apparatus, and materials to select those appropriate both for fieldwork and for experiments
- carrying out experiments appropriately, having due regard to the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations
- recognising when to apply a knowledge of sampling techniques to ensure any samples collected are representative • making and recording observations and measurements using a range of apparatus and methods
- evaluating methods and suggesting possible improvements and further investigations.

Analysis and evaluation;

- applying the cycle of collecting, presenting and analysing data, including:
- presenting observations and other data using appropriate methods
- translating data from one form to another
- carrying out and representing mathematical and statistical analysis
- representing distributions of results and making estimations of uncertainty
- interpreting observations and other data, including identifying patterns and trends, making inferences and drawing conclusions
- presenting reasoned explanations, including relating data to hypotheses
- being objective, evaluating data in terms of accuracy, precision, repeatability and reproducibility and identifying potential sources of random and systematic error
- communicating the scientific rationale for investigations, including the methods used, the findings and reasoned conclusions, using paper-based and electronic reports and presentations.

Vocabulary, units, symbols and nomenclature;

- developing their use of scientific vocabulary and nomenclature
- recognising the importance of scientific quantities and understanding how they are determined
- using SI units and IUPAC chemical nomenclature unless inappropriate
- using prefixes and powers of ten for orders of magnitude (e.g. tera, giga, mega, kilo, centi, milli, micro and nano) • interconverting units
- using an appropriate number of significant figures in calculations.