Year 10

Curriculum Map

SALE HIGH SCHOOL

term	topic	Assessments.
Aut 1 **8 weeks**	**BLUE book** **(my personal world)** Self family Relationships friends	Listening and Reading assessment
Aut 2 **7 weeks**	BLUE book Days out with friends Arranging to go out Problems	Speaking and writing assessment
Spring 1 **6 weeks**	**YELLOW book** **(Media and technology)** Phones Social media Gaming TV film Music	Mid Year Exam
Spring 2 **5 weeks**	**PURPLE book** **(lifestyle and wellbeing)** Routine Eating habits Healthy eating Body illness	Reading and Listening assessments
Summer 1 **7 weeks** **EOY exams**	Sport Physical/mental health _ drugs **ORANGE book** **(Study and future)** Subjects School life	Speaking and Writing assessments

	Uniform and rules	
Summer 2 **6 weeks** **(-yr10 PPE oral)** **SPAIN trips**	Post 16/ uni / Jobs Languages in the workplace	EOY exam including full Oral PPE

PSHE Curriculum 2026-27

Intent:

As a school, we strive to see all of our students grow, thrive and achieve both academically and personally. Whilst this does require our students to build and foster their own personal virtues, through our Sale High School Values, we ensure that all students understand their role as individuals, both within our school community and the wider communities in which we live. Our PSHE curriculum is just one of the ways in which we aim to support our students to become the best they can be throughout this important phase of personal and moral development.

Our PSHE (Personal, Social, Health, and Economic Education) curriculum encompasses key aspects of personal development, including emotional health and well-being, physical health, relationships, citizenship, financial literacy, and careers education. It is designed to encourage students to reflect on their values and beliefs, cultivate self-awareness, and foster respect for others. Sequenced expertly to build knowledge and personal skills, this PSHE curriculum is designed with keen focus on our Sale High School Values to ensure that our curriculum is both positive and meaningful, equipping teachers to give guidance that develops the character of each student, allowing them to flourish in their education and their life.

The PSHE Curriculum has been carefully planned to ensure that students from Year 7 – 11 will be focusing on building **key competencies** across a range of difference topics. Our key competencies are:

- Independence and aspiration
- Autonomy and advocacy
- Choices and influences.

This competencies-based model ensures that students are given key opportunities to build the skills needed to go on to be confident, resilient and ambition individuals, keeping in line with our Sale High School values (Respect, Diversity, Community, Aspiration, Resilience, Achievement).
All students across the school will be focusing on the same competencies at the same time. Assemblies will also build on these key competencies so that students from Y7 to 11 will be receiving a similar message at the same time. Therefore, staff can refer to topics/key concepts/themes in their own subject areas and embrace opportunities for cross-curricular teaching and learning. It also allows the staff at Sale High School to be aware of the values/messages that are being shared so that PSHE can become embedded in the wider school curriculum through interactions with students.

PSHE Lessons will be taught in a Timetabled hour once per fortnight, allowing for consistency and encouraging students engage in meaningful discussions around the PSHE content.

Lessons in Years 10 and 11 will also **incorporate elements of core Religious Education to help us meet the Statutory Requirements for RE**, enabling students to be adequately prepared to be accepting and tolerant individuals in an ever-increasing multifaith society. Students will be encouraged to consider the worldviews of those of faith and of none, thus giving them a broad and balanced understanding of the world in which we live.

SALE HIGH SCHOOL

2025 / 26	**Autumn 1** Independence and Aspirations	**Autumn 2** Autonomy and Advocacy	**Spring 1** Choices and Influence	**Spring 2** Independence and Aspirations	**Summer 1** Autonomy and Advocacy	**Summer 2** Choices and Influences
Character Taught	**Aspiration & Achievement**	**Resilience, Diversity, Community**	**Respect & Community**	**Aspiration & Achievement**	**Resilience & Diversity**	**Respect & Community**
10	**Developing goal-setting, adaptability and organisational skills:** • Managing transition to KS4, including learning skills • Managing mental health.	**Developing empathy and compassion, strategies to manage influence and assertive communication:** • Relationship expectations • Impact of pornography • Identifying and responding to abuse and harassment	**Developing respect for diversity, risk management and support-seeking skills:** • Nature of committed relationships • Forced marriage • Diversity and discrimination • Extremism	**Developing goal-setting, leadership and presentation skills:** • Skills for employment • Applying for employment • Online presence and reputation	**Government, Democracy & Politics** • What is democracy • UK Government Structure • Elections & Voting • Political parties & ideologies • Active citizenship	**Developing motivation, organisation, leadership and presentation skills:** • Preparation for and reflection on work experience
11	**Developing goal-setting, confidence, adaptability and organisational skills:** • Personal Statements • Managing stress relating to future employment	**Developing communication and negotiation skills, risk management and support-seeking skills:** • Relationship values • Maintaining sexual health • Sexual health services • Fertility, adoption & abortion • Managing relationship challenges and endings	**Developing confidence, agency and support-seeking skills:** • Making safe and healthy choices • Health promotion and self-examination • Blood, organ, stem cell donation	. **Government, Democracy & Politics** • What is democracy • UK Government Structure • Elections & Voting • Political parties & ideologies • Active citizenship	**Developing confidence, self-worth, adaptability and decision making skills:** • Recognising and celebrating successes • Transition and new opportunities • Aligning actions with goals	[redacted]

Curriculum Map Year 10: Maths

Intent:

The Sale High Mathematics department will provide lessons which are both challenging and stimulating. Our aim is for all students to enjoy mathematics and to achieve their potential. A variety of teaching styles cater for all students' learning needs and staff are always available to support all students both in and out of the classroom. There are ample opportunities for students to learn maths in a variety of enriching ways including after school clubs and entering national competitions. Students who wish to go beyond the National Curriculum will be able to Study Level 2 further mathematics.

The combination of developing fluency and mathematical understanding in tandem will enable students to use their learning accurately, efficiently and flexibly to reason mathematically and solve routine and non-routine problems, so meeting the aims of the national curriculum and GCSE Edexcel Mathematics specification. It will enable students to solve problems efficiently in later life and students who pursue further studies in mathematics will have sufficient breadth and depth to enable success.

Why I study Maths?

"I learn mathematics because:

- It helps me solve everyday problems,
- Improves by communication skills,
- Make me better at managing my money,
- Opens up more future career options."

Cultural capital/enrichment

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.
In year 10 students are entered into the Uk math challenge and Manchester University maths feast.

Foundation

OVERVIEW

Students study topics in each of the five key strands in mathematics: Number, Algebra, Geometry, Ratio & Proportion and Statistics & Probability. Each strand builds on their prior learning from Years 7, 8, and 9.

We focus on developing knowledge and skills in each of the five strands which students will then build on to solve problems and reason mathematically.

Autumn

10.01: Rearranging – one step rearranging, multi-step rearranging, rearranging with fractions, with negative unknowns and with unknowns on both sides. In this unit we will also revisit algebraic fundamentals such as collecting like terms, expanding and factorising.

10.02: Linear Graphs – coordinates, midpoint, horizontal and vertical lines, drawing straight line graphs, real life graphs. In this unit we will also revisit substitution.

10.03: Gradient and y-intercept – identifying gradients and y-intercepts, finding the equation from a graph, finding the equation from gradient and coordinates.

10.04: Compound Measures – calculating speed distance and time, calculating average speed, distance time graphs, calculating density mass and volume, calculating force pressure and area.

Assessment:

Students will be informally assessed every lesson using questioning and marking of independent work.

Students will be assessed at the end of every topic using Edexcel GCSE questions.

Spring

10.05: Quadratic graphs – drawing quadratics, identifying roots solutions and turning points, finding roots, lines of symmetry, finding turning points.

10.06: Linear simultaneous equations – solving linear simultaneous equations with elimination and substitution method, solving linear simultaneous equations graphically. In this unit we will also revisit solving linear equations.

10.08: Probability – probability scale, listing, single event probability, relative frequency, expected outcomes, frequency trees, sample space, Venn diagrams, tree diagrams.

10.09: Standard form – writing numbers in standard form, four operations with standard form.

10.10: Simple Interest – calculating percentage increase and decrease in context.

Assessment:

Mid-Year assessments will take place in January.

Students will be informally assessed every lesson using questioning and marking of independent work.

Students will be assessed at the end of every topic using Edexcel GCSE questions.

Summer

10.11: Growth and decay – simple interest, compound interest, comparing compound and simple interest, depreciation, exponential growth and decay.

10.12: Further ratio – equivalent ratio, ratios to fractions, sharing in a given ratio, combining ratios, splitting ratios, problem solving with ratio.

Unit 13: Statistics - types of data, sampling, mode median and range, mean, problem solving with mean, combining mean, comparing averages, averages and range from a frequency table, mean from a frequency table, mean from a grouped frequency table, pie charts, scatter graphs, frequency polygons.

Assessment:

Students will be informally assessed every lesson using questioning and marking of independent work.

Students will be assessed at the end of every topic using Edexcel GCSE questions.

End of Year assessments will take place in June.

Useful resources for supporting your child at home:

Videos on Sparx (www.sparxmaths.uk)

Videos on Corbett Maths (Videos and Worksheets – Corbettmaths)

CGP GCSE Maths Edexcel Revision Guide (link here)

REVISE Pearson Edexcel GCSE (9-1) Mathematics (link here)

Homework:

Homework will be set on Sparx (www.sparxmaths.uk).

Homework will be set once a week and students are expected to complete 100% of their homework each week. Homework is bespoke for all students depending on their performance in previous weeks.

Higher

OVERVIEW

Students study topics in each of the five key strands in mathematics: Number, Algebra, Geometry, Ratio & Proportion and Statistics & Probability. Each strand builds on their prior learning from Years 7, 8, and 9.

We focus on developing knowledge and skills in each of the five strands which students will then build on to solve problems and reason mathematically.

Autumn

10.01: Rearranging – one step rearranging, multi-step rearranging, rearranging with fractions, with negative unknowns, subjects in the denominator and with unknowns on both sides

10.02: Linear Graphs – coordinates, midpoint, horizontal and vertical lines, drawing straight line graphs, real life graphs.

10.03: Gradient and y-intercept – identifying gradients and y-intercepts, finding the equation from a graph, finding the equation from gradient and coordinates, parallel and perpendicular lines and find the equation of a tangent to a circle.

10.04: Compound Measures – calculating speed distance and time, calculating average speed, distance time graphs, calculating density mass and volume, calculating force pressure and area

10.05: Quadratic graphs – drawing quadratics, identifying roots solutions and turning points, finding roots, lines of symmetry, finding turning points

Assessment:

Students will be informally assessed every lesson using questioning and marking of independent work.

Students will be assessed at the end of every topic using Edexcel GCSE questions.

Spring

10.06: Expanding and Factorising – expanding triple brackets, factorizing quadratics with a coefficient greater than 1, solving algebraic fractions, four operations with algebraic fractions, completing the square

10.07: Linear simultaneous equations – solving linear simultaneous equations using rearranging and the substitution method, solving linear and quadratic simultaneous equations graphically.

11.02: Solving Quadratics and Further Simultaneous Equations – solving by factorizing, solving using the quadratic formula, solving by completing the square, solving quadratics from algebraic fractions, solving linear and nonlinear simultaneous equations

10.09: Probability – probability scale, listing, single event probability, relative frequency, expected outcomes, frequency trees, product rule for counting, Venn diagrams and tree diagrams.

10.10: Standard form – writing numbers in standard form, four operations with standard form

10.11: Further proportion – linear and non-linear direct proportion, linear and non-linear inverse proportion, proportion tables, complex further proportion

10.12: Growth and decay – simple interest, compound interest, comparing compound and simple interest, depreciation, exponential growth and decay

10.13: Further ratio – equivalent ratio, ratios to fractions, sharing in a given ratio, combining ratios, splitting ratios, problem solving with ratio.

Assessment:

Mid-Year assessments will take place in January.

Students will be informally assessed every lesson using questioning and marking of independent work.

Students will be assessed at the end of every topic using Edexcel GCSE questions.

Summer

10.15: Statistics – types of data, sampling, mode median and range, mean, problem solving with mean, combining mean, comparing averages, averages and range from a frequency table, mean from a frequency table, mean from a grouped frequency table, pie charts, scatter graphs, frequency polygon

10.16: Surds – simplifying, four operations with surds, expanding and simplifying, rationalising with a single surd, rationalising with an expression, perimeter and area

10.17: Bounds – finding upper and lower bounds, calculations with bounds, suitable degree of accuracy

10.18: Right angled trigonometry – labelling sides, finding missing side lengths, finding missing angles isosceles triangles, exact trigonometric values

10.19: Similar shapes – finding missing lengths, area of similar shapes, volume of similar solids

10.20: Quadratic sequences - finding terms, finding the nth term

10.21: Plans and elevations – plans and elevations of 3D shapes, sketching 3D shapes from plans and elevations

10.02: Constructions and loci – perpendicular bisectors, angle bisectors, constructing triangles and parallelograms, loci lines, loci regions

11.13: Gradients and area under a graph – equation of a tangent to a circle, interpreting gradients, finding acceleration, estimating distance travelled

Assessment:

Students will be informally assessed every lesson using questioning and marking of independent work.

Students will be assessed at the end of every topic using Edexcel GCSE questions.

End of Year assessments will take place in June.

Useful resources for supporting your child at home:

Videos and worksheets on (https://www.mathsgenie.co.uk/gcse.html)

Videos on Sparx (www.sparxmaths.uk)

Videos on Corbett Maths (Videos and Worksheets – Corbettmaths)

CGP GCSE Maths Edexcel Revision Guide (link here)

Pearson Revise Edexcel GCSE (9-1) Mathematics (link here)

Homework:

Homework will be set on Sparx (www.sparxmaths.uk).

Homework will be set once a week and students are expected to complete 100% of their homework each week. Homework is bespoke for all students depending on their performance in previous weeks.

Students complete shadow copies of Edexcel GCSE papers using

Curriculum Map Year 10: Art

Intent:

The Year 10 Art and Design GCSE curriculum for students studying the topic of Natural Forms is designed to inspire and empower young artists to explore the intricate beauty and diverse wonders of the natural world. Through this course, we intend to foster a deep appreciation for nature's forms, patterns, and textures while nurturing creativity and honing essential artistic skills. Our goal is to encourage students to delve into the often-overlooked details of the environment, from the graceful curves of leaves to the complex structures of shells and beyond. By engaging in this exploration, students will develop a profound understanding of the relationship between art and nature, as well as the role of observation and interpretation in the creative process. Through a wide array of artistic techniques, mediums, and styles, students will have the opportunity to experiment, express themselves, and ultimately produce compelling artworks that reflect the intricacy and wonder of the natural world. In addition to two-dimensional artwork, this curriculum also incorporates larger scale sculpture, allowing students to venture beyond traditional mediums and delve into three-dimensional expressions of natural forms. Our curriculum not only aims to equip students with technical proficiency but also to encourage critical thinking, creative problem-solving, and a lifelong appreciation for the beauty of natural forms, whether captured on paper or brought to life in sculptural creations.

Why I study Art?

I study Art because:

- It helps me find meaning in the world.
- It helps me express my identity.
- It helps me explore culture and ideologies.

Cultural capital/enrichment

Studying the Natural Forms project in Year 10 Art not only enriches students' artistic skills but also cultivates a significant cultural capital. This project immerses students in a diverse range of artistic voices and perspectives from various cultural backgrounds. By exploring the works of artists hailing from different corners of the world, students gain a deeper understanding of how culture and heritage influence artistic expression. The project is a journey through the crossroads of nature and creativity, allowing students to appreciate the global tapestry of art while drawing inspiration from a rich mosaic of techniques. Furthermore, the trip to Yorkshire Sculpture Park provides a unique opportunity to expand their contextual knowledge by engaging with art installations amidst the stunning Yorkshire landscape. This exposure not only fosters a profound connection between art and environment but also enables students to grasp the symbiotic relationship

between art and culture, building a strong foundation for their own creative growth. In essence, the Natural Forms project not only nurtures artistic talent but also broadens students' horizons, making them culturally aware and globally minded artists.

Half term	Topic	Key knowledge	Key skills I will learn in this topic	Assessment opportunities (Summative and formative) Key pieces

AUTUMN	Skills development towards assessment objectives (A01/A02/A03)	Skills development phase- Students will be taught how to accurately record from visual stimulus in a variety of ways including: continuous line, analytical drawing, printing, collage etc. They will use pencil, graphite, chalk, charcoal, pen, oil pastel, soft pastel, and watercolour. Each skill will be anchored by using the theme of natural forms and will focus on the 7 elements of Art and Design. The students will create studies from direct observation and photography and are encouraged to collate their own selection of primary images. The main artist focus for the Autumn term is Natalie McIntyre, a pen artist with a focus on precision, detail and accuracy.	1. **Observational Drawing Skills**: Developing the ability to closely observe and accurately depict the intricate details and textures of natural forms, such as leaves, shells, or flowers. 2. **Medium Exploration**: Learning to work with a range of materials, such as oil pastels and chalk, to create vibrant and textural drawings that capture the essence of the natural forms. 3. **Drawing from Life**: Practicing drawing directly from life, which involves capturing the physical attributes of objects in real-time, improving their accuracy and realism. 4. **Primary Image Collection**: Understanding how to collect primary source material, such as photographs and sketches, to inform their artwork and support their creative process. 5. **Visual Analysis**: Developing the skills to critically analyse and interpret the intricate details and structures of natural forms, drawing inspiration from the work of artist Natalie McIntyre. 6. **Colour Theory**: Exploring colour palettes that best represent the natural forms they are studying, experimenting with colour mixing and harmonies. 7. **Texture Representation**: Practicing techniques to create textures that mimic the surfaces and details of natural forms, making their drawings more lifelike. 8. **Artistic Process Development**: Understanding how to plan and execute an artwork, including choosing an appropriate medium, preparing a composition, and refining their technique. 9. **Incorporating Artist Inspiration**: Drawing insights from the work of artist Natalie McIntyre, integrating elements of her style and approach into their own creative process. 10. **Creative Problem-Solving**: Encouraging students to think critically and creatively to overcome challenges that may arise during the artistic process. By focusing on natural forms and incorporating these skills into their project, Year 10 Art GCSE students will not only	1.Baseline assessment drawn in pencil of a still life natural forms object 2.Oil pastel beetle study with a focus on display of reflection through colour blending Key writing pieces such as artist analysis will be marked for accuracy, complexity of thought and SPAG.

			gain proficiency in artistic techniques but also deepen their appreciation for the beauty and intricacy of the natural world. This project will provide a solid foundation for their artistic development and further exploration in the field of art and design.	

SPRING	Artist influence and development of ideas	A final natural forms piece will be developed using the student's own images, and will take inspiration from the artist Jill Bliss. Students will create a 3D sculpture in her style which will be refined and developed from draft designs linking to their own ideas and their understanding of the artist's techniques. A strong emphasis will be placed on recurring patterns and students will begin to create a range of prints to explore this. Students will explore oil pastel transfers, mono printing and a range of materials when constructing their 3D piece. The combined focus on sculptural work, printmaking, and the development of independent projects will equip Year 10 Art GCSE students with a broad set of skills and a deep understanding of artistic concepts, enabling them to approach their future creative endeavors with confidence and creativity.	Year 10 Art GCSE students embarking on the development of their final sculptural piece, inspired by their prior learning and artist Jill Bliss, will acquire a range of key skills. 1. **Conceptual Development**: Learning to brainstorm and refine their ideas to create a clear and compelling concept for their sculptural piece. 2. **Three-Dimensional Artistry**: Gaining proficiency in working with sculptural materials, understanding form, structure, and spatial relationships. 3. **Material Exploration**: Experimenting with various sculptural materials, such as clay, modrock, papier mache and mixed media, to achieve their artistic vision. 4. **Observation Skills**: Enhancing their ability to observe and interpret natural forms, following the influence of artist Jill Bliss. 5. **Conceptual Art Integration**: Incorporating the conceptual depth and artistic sensibilities developed in previous projects into their sculptural and printmaking work. 6. **Visual Analysis**: Developing the ability to analyse and interpret the work of both Jill Bliss and Angie Lewin to extract inspiration and apply it to their own creations. 7. **Composition and Design**: Applying design principles to sculptural pieces, ensuring a balanced and harmonious arrangement of elements. 8. **Creative Problem-Solving**:	1. Natalie McIntyre Response 2. Jill Bliss response Key writing pieces such as artist analysis will be marked for accuracy, complexity of thought and SPAG.

			Encouraging independent and critical thinking to address challenges that arise while creating both sculptural and printmaking pieces. 9. **Presentation and Display**: Learning how to effectively present and display their sculptural and printmaking pieces, considering exhibition and presentation standards.	

SUMMER	Finalising ideas and independent projects	The summer term will be all about refining the work from year 10 to create a top quality art portfolio. Students will collate their work from the year into a professional composition which clearly displays their skillset and shows how the students have met the 4 assessment objectives. This will be an opportunity for students to develop their ideas further and improve on any work they are not happy with. Students will be able to explore additional materials which will aid them in gaining marks from assessment objective 2. Additionally, their introduction to new printing mediums, such as intaglio printing and etching, will further enrich their artistic toolkit, drawing from the inspiration of artist Angie Lewin. Students will be given a past paper from AQA and begin their first year 11 project before the end of term.	1. **Composition and Design**: Learning to arrange the elements of their artwork in a visually engaging and balanced composition, considering concepts like balance, contrast, and focal points. **2.Presentation and Display**: Learning how to properly present and display their finished artwork, which may include mounting, framing, or other presentation techniques. 3. **Artistic Process Management**: Understanding how to plan and execute complex multi-step projects, balancing the sculptural and printmaking components. 4. **Independence and Initiative**: Fostering autonomy in decision-making and creative exploration, a key skill as they work on their second project based on a past AQA Art, Craft, and Design GCSE paper. 5. **Technique Proficiency**: Mastering the techniques involved in intaglio printing and etching, including etching plates, inking, and printing. 6. **Printmaking Skills**: Learning how to create intricate and detailed prints through intaglio techniques, inspired by artist Angie Lewin's work.	1. Sculpture design 2. Observational drawing (past paper) Key writing pieces such as artist analysis will be marked for accuracy, complexity of thought and SPAG.

Curriculum Map Year 10: Design & Technology

Intent:

- Design & Technology encourages students to make informed technological choices, considering global, cultural, ethical, environmental, political, and economic factors.
- Students learn to innovate by combining traditional and modern technologies, focusing on the iterative design cycle to develop creative solutions to everyday challenges.
- The subject integrates mathematics, science, engineering, computing, geography, business, and art.
- It goes beyond practical skills, developing Creative Thinking & Innovation, Problem-Solving, Practical & Technical Skills, Collaboration & Teamwork, Project Management, Analytical & Research Skills, Resilience & Adaptability, Entrepreneurial Thinking, and Attention to Detail.

Why I study Design & Technology?

We provide opportunities, which allow students to develop a knowledge of a range of technology areas in KS3. Students should grow in confidence through dedicated teaching environments, manufacturing equipment and specialist teaching. As students' progress to KS4 they choose an area within Design & Technology to study. In the chosen area, the subject allows for deeper study of the world they live in, potential career opportunities and with the skills developed at KS3 the confidence to take risks, become resourceful, innovative, enterprising and capable citizens. The subject encourages students to design and make products that solve real and relevant problems, within a variety of contexts, while considering their own and other's needs, wants and values. Cultural capital is explored across the key stages by appreciation of the work of others locally, nationally and internationally, each subject identifies and relates to real contextual challenges focussing upon people, communities or businesses.

I learn Design & Technology because:

- It allows me to be creative and innovative.
- It develops my problem solving and evaluation skills.
- It increases my understanding of how the world around me has been created.

Cultural capital/enrichment

Our carefully structured DT curriculum provides opportunities that are additional to the National Curriculum. Design technology helps to build cultural capital through exposure to life-skills such as innovation and entrepreneurship. Our curriculum enables and nurtures a love of design and technology, helping students to develop the skills required for their future working life.

Students will learn about a range of areas where designing and creating for a purpose take places. We link these subjects to real life experiences and famous designers and communicating ideas and developing prototypes using CAD.

Half term	Topic	Key knowledge	Key skills I will learn in this topic	Assessment opportunities (Summative and formative) Key pieces
Autumn 1&2	Gcse core and specialist knowledge	**Core subject knowledge Timbers** Understand where timbers come from their material proprieties and their uses. Understand the environmental impact of using timbers to make products. Understand what a finish is and how they can be applied to timbers and boards **Trinket box project** Understand how to make timber-based products of a high quality **Mini lamination project.** Understand how timbers can be shaped into unique forms. **Specialist knowledge timbers students must understand :** 1. The sources, origins, physical and working properties of the material categories or the components and systems, and their ecological and social footprint. 2. The way in which the selection of materials or components is influenced by a range of factors, such	Be able to explain the sources of timber products and explain the properties and uses of various soft woods, hard woods and manufactured boards. Be able to conduct an LCA to highlight the impact of timber products on the environment and be able to suggest ways that negative impacts can be reduced E.G sourcing material from sustainable forest. Be able to select and apply appropriate finishes to timbers. Know how to select the correct material to make a high-quality product and be able to select and use workshop tools and other specialist equipment. Be able to bend timber using techniques such as lamination and steam bending. Be able to apply specialist knowledge to the development of new innovative products that meet the needs and wants of an identified target markets. Be able to apply specialist knowledge when answering exam questions.	Assessment opportunities are provided through hands down questioning, discussions, brain storming, spider diagrams, quizzes, verbal feedback, self and peer assessment. Assessment will focus on four areas: • Core knowledge (exam questions) • Written assessments linked to NEA activities. • Design skills • Making skill.

		as functional, aesthetic, environmental, availability, cost, social, cultural and ethical. 3. The impact of forces and stresses on materials and objects and the ways in which materials can be reinforced and stiffened. 4. Stock forms, types and sizes in order to calculate and determine the quantity of materials or components required. 5. Alternative processes that can be used to manufacture products to different scales of production. 6. Specialist techniques and processes that can be used to shape, fabricate, construct and assemble a high quality prototype, including techniques such as wastage, addition, deforming and reforming, as appropriate to the materials and/or components being used. 7. Appropriate surface treatments and finishes that can be applied for functional and aesthetic purposes		
		Core knowledge Polymers Understand where polymers come from their material proprieties and their uses.	Be able to explain the sources of polymer products and explain the properties and uses of various thermo and thermosetting polymers.	
		Understand the environmental impact of using polymers to make products.	Be able to conduct an LCA to highlight the impact of polymer products on the environment and be able to suggest ways that negative impacts can be reduced E.G using the 6rs of sustainability.	
		Understand Advantages and disadvantages of CAD CAM	You should also be able to articulate the advantages and disadvantages of CAD CAM in industry and know how to use it to make products of a consistent quality in small batches.	
		Understand the importance that analysing existing products has on the development of new products.	Be able to write a detailed product analysis that critically identifies positives and negatives of existing products and also helps inform the development of new products.	

		Tatty divine jewellery project. Understand how to use CAD CAM to design and make products out of polymers.	Be able to use software, such as 2D design, to create jewellery inspired by the retailer Tatty Divine, and have the capability to produce this jewellery in small batches using laser cutters.	
		Core knowledge Papers and board Understand where paper come from their material proprieties and their uses.	Be able to explain the sources of paper products and explain the properties and uses of various papers and boards.	
		Understand the environmental impact of using paper to make products.	Be able to conduct an LCA to highlight the impact of paper products on the environment and be able to suggest ways that negative impacts can be reduced E.G sourcing paper from FSC approved forest.	
		Pop up card project. Understand how to use papers and boards to make a simple commercially viable product.	Be able to safely and accurately use tools, such as craft knives, to create a pop-up card that considers the properties of the materials used and how they can be utilized to apply working mechanisms to the card	
Spring 1&2		**Core knowledge ferrous, non-ferrous and alloy metals.** Understand where metals come from their material proprieties and their uses.	Be able to explain the sources of paper products and explain the properties and uses of various non ferrous, ferrous and alloy metals.	
		Understand the environmental impact of using metals to make products.	Be able to conduct an LCA to highlight the impact of metal products on the environment and be able to suggest ways that negative impacts can be reduced E.G recycling materials.	

		Metal skills project. Understand how to use the working properties of metals to make a simple product. (cutting, drilling, riveting, filing, forming, casting, brazing and finishing)	Be able to use skills such as drilling, riveting, filing, brazing and casting to make a simple metal product.	
		Core knowledge textiles Understand where textiles come from their material proprieties and their uses.	Be able to explain the sources of textile products and explain the properties and uses of various natural and synthetic fibres.	
		Understand the environmental impact of using textiles to make products.	Be able to conduct an LCA to highlight the impact of textile products on the environment and be able to suggest ways that negative impacts can be reduced E.G reducing fast fashion trends.	
		Self-portrait Felt toy project. Understand how to use the working properties of materials such as felt to make a simple product	Be able to use skills such as blanket stitching and embroidery to design and make a simple product.	
		Smart materials, composites and technical textiles Understand how the development of modern and smart materials have impacted the development of new innovative products.	Be able to identify various smart and modern materials and explain their properties and uses .	
		design without making project. Understand the importance of iterative design to the development of new products.	Be able to embed knowledge of smart materials alongside developing core design skills including, isometric, line weighting, rendering, prototyping and cad development using sketch up	
Summer1&2		**Electronic systems and programmable components**		

		Understand How electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs understand how programmable components embed functionality into products in order to enhance and customise their operation. **Mechanical components and devices** Understand The functions of mechanical devices, to produce different sorts of movement, changing the magnitude and direction of forces. **pinball/mechanical toy project** understand how mechanism can be used to make interactive functional products with moving parts.	Be able to explain the uses of different electrical components and be able to build a functioning circuit that responds to and input, producing an output. Understand how different mechanical devices can change movement direction and the required force for tasks. Learn to calculate mechanical advantage and velocity ratio for accurate design when creating mechanical products. Be able to apply knowledge of mechanisms to design and make a working toy with moving parts.	

Curriculum Map Year 10: Engineering

Intent:

- Provide students with a solid foundation in key engineering disciplines, including applied science and mathematics, to solve real-world engineering problems.
- Develop practical skills in using engineering tools, machinery, and techniques, alongside proficiency in interpreting and creating both hand-drawn and CAD engineering drawings.
- Foster creativity, critical thinking, and problem-solving abilities through hands-on projects, with a focus on sustainable engineering practices and material selection.
- Prepare students for further education or careers in engineering by enhancing technical competence, understanding of health and safety, and employability skills.

Why I study Design & Technology?

it provides a strong foundation in critical thinking and problem-solving skills, essential for tackling real-world challenges.

it fosters creativity and innovation, allowing me to design and build projects that make a positive impact on the world and society.

It develops project management, team working and communication skills.

Cultural capital/enrichment

Our carefully structured DT curriculum provides opportunities that are additional to the National Curriculum. Design technology helps to build cultural capital through exposure to life-skills such as innovation and entrepreneurship. Our curriculum enables and nurtures a love of design and technology, helping students to develop the skills required for their future working life.

Students will learn about a range of areas where designing and creating for a purpose take places. We link these subjects to real life experiences and famous designers and communicating ideas and developing prototypes using CAD.

Half term	Topic	Key knowledge	Key skills I will learn in this topic	Assessment opportunities (Summative and formative) Key pieces
Half term 1	• **Content area 1. Engineering Disciplines**: • Topics include • Mechanical Engineering • Electrical Engineering • Electronic Engineering • Aerospace Engineering • Telecommunications Engineering • Chemical Engineering • Civil Engineering • Automotive Engineering • Biomedical Engineering • Software Engineering • Health and safety at work • PPE	Understand the different engineering sectors (e.g., mechanical, electrical, civil, aerospace) Understand the roles of engineers, technicians, and technologists Understand the Skills required in each engineering discipline	Be able to Identify key characteristics and applications of different engineering disciplines and Be able to explore career paths and progression opportunities in different engineering fields while Analysing key tasks and responsibilities in the engineering job roles	Assessment opportunities are provided through hands down questioning, discussions, , quizzes, verbal feedback, self and peer assessment, whole class mark sheets Assessment will focus on four areas: • Core knowledge (exam questions) • Key Written assessed pieces • Mini exams after each content area

	• Manual Handling Operations Legislation • COSHH • RIDDOR • **Content area 2.Applied Science and Mathematics in Engineering** • Topics include: • SI Units of Measurement • Current and Luminous Intensity • Thermodynamic Temperature • Mass and Length • Amount of Substance • Time • Application of Base SI Units • Equations for Properties • Energy • Force and Motion • Mass • Electrical • Geometric – Area • Geometric – Volume • Application of Equations	Understand some of the basic engineering formulas (e.g., area, volume, force, torque) Understand the different units and conversions (e.g., metric and imperial) Understand Principles of forces and motion Understand concepts of work, energy, and power Understand some of the fundamental physics concepts relevant to engineering (e.g., electricity, magnetism, thermodynamics)	Be able to perform calculations to solve engineering problems using relevant units in the calculations . Be able to analyse the effects of forces on structures and mechanisms and apply these concepts to real world engineering scenarios. Be able to apply physics principles to engineering problems.	
Half term 2	**Content area 3. Reading Engineering Drawings** Topics include:	Understand the different types of engineering drawings (e.g., orthographic, isometric, assembly drawings).	Be able to interpret various types of engineering drawings and recognise standard symbols and their meanings.	

	• What are Engineering Drawings? • Line Types • Tolerance • Title Block • Scale • System of measurement • 2D Projection: First and Third Angle Projection • 3D: Isometric • 3D: Oblique drawings • BS 8888	Understand the different symbols and conventions used in technical drawings. Understands the Importance of dimensions and tolerances in engineering design.	Be able to manufacture a product by reading and applying dimensions and tolerances from engineering drawings.	
	Content area 4:Properties, Characteristics, and Selection of Engineering Materials Topics include: • Chemical properties • Electrical and magnetic properties • Optical and thermal properties • Aesthetics • Environmental impact • Sustainability • Renewables • Carbon footprint • Recycling • Metals • Polymers • Wood	Understand the different classification of materials (e.g., metals, polymers, ceramics, and composites). Understand key properties of materials (e.g., tensile strength, hardness, ductility, thermal conductivity). Understand the factors that lead to material selection including mechanical properties and aesthetics. Understand the environmental considerations in material selection (e.g., recyclability, sustainability).	Be able to identify different types of engineering materials and their applications and apply selection criteria to choose appropriate materials for specific engineering tasks. Be able to Assess the environmental impact of different materials and make sustainable choices when manufacturing products.	

	• Ceramics • Composites			
Half term 3	**Content area 5:Engineering Tools, Equipment, and Machines** Topics include : • Marking out • Modification • Joining • Finishing • Safe and correct use • Control measures **Context area 6: Hand-Drawn Engineering Drawings** Topics include: • freehand drawings • Colour and direction of light • Rendering and shading • Annotations and • Isometric basics • Isometric and orthographic basics • hand-drafted drawings in isometric • Scaling isometric objects • Converting from orthographic to isometric	Understand the different hand tools, power tools, and machine tools used in engineering. Understand how to use tools safely and with accuracy to perform a range of engineering task. Understand fundamental techniques for hand-drawing engineering drawings Understand some of the standards for presenting hand-drawn engineering drawings (e.g., line weights, styles) Understand what isometric and orthographic projection are and how they are used to communicate designs and technical information	Be able to identify and select appropriate engineering tools for a range of practical engineering task. Be able to safely use different tools with skill and accuracy to make a quality prototype that meets a range control measures. Students will be able to explain what some of the basic techniques of free hand drawing are and be able to explain some of the standards used in engineering drawings . Students will be able to produce a range of different drawings including, free hand sketches, isometric drawings, first and third angle orthographic projection. They will be able to produce these drawings to meet the BS8888 standards.	

	• hand-drawn orthographic drawing • hand-drawn first angle orthographic drawing • hand-drawn third angle orthographic drawing			
Half term 4	**Content area 7: Computer-Aided Design (CAD) Engineering Drawings** Topics include: • CAD engineering drawings – What is CAD • Units of measurement in CAD engineering drawings • Lines and title block • CAD isometric drawing • CAD orthographic drawing • CAD – Isometric to orthographic • CAD – Orthographic to isometric • Finite element analysis and modelling • Computer aided manufacturing CNC **Content area 8: Production Planning Techniques** Topics include: • Hazards, risks, and control measures	Understand what CAD software is and its applications in engineering design. Understand the Techniques used for creating 2D engineering drawings in CAD. Understand the fundamentals of 3D modelling and visualisation in CAD. Understand the importance of adding annotations, dimensions, and notes in CAD drawings. Understand the different file types and their uses in Engineering. Understand what production planning is and its importance in engineering and manufacturing Understand the different production systems (e.g., batch, continuous, just-in-time)	Be able to navigating CAD software interfaces and tools to enable the designing and modifying of 2D drawings and 3d models using various CAD software. Students will be able to export drawings in various formats for printing and sharing and manufacturing using CAM/CNC. Be able to explain what a production plan is and why it is important. Students will be able to plan making activities using various methods of production planning such as Gannt charts and flow charts.	

	• risk assessments • Tools and equipment • Control measures and quality control measures • Flow charts • Gantt chart • Spreadsheet • Time plan	Understand the different methods for scheduling production activities (e.g., Gantt charts, flow charts etc) Understand Importance of quality control and health and safety in production planning	Students will be able to make sure that control measures and risk assessments are in place to ensure making activities are successful and safe.	
Half term 5	**Content area 9: Applied processing skills and techniques** Topics include: • Preparing materials • Marking out • Drilling • Cutting and filing • Bending • Metal casting • Sand casting • Soldering • Joining materials • Finishing materials • Applying a surface finish • CNC/CAM machines • Safe use of power tools • Safe use of fixed machines • Control measures	Understand some of the various processing techniques used in engineering (e.g., machining, forming, assembly) Understand how to safely use various had tools and fixed machines Understand how different materials are joined together. Understand what a finish is and what some of the finishing techniques are (eg polishing , coating etc)	Students will be able to use hand tools and fixed machines safely and accurately to cut, form and finish materials. Students will be able to select appropriate joining methods to join materials together and apply finishing processes to make a high-quality product.	
Half term 6	**Practice NEA** Students will use knowledge and skills gained in the previously covered content areas to	Understand how to identify and define real-world engineering problems	Be able to analyse problems and develop a clear problem statement that will lead the direction of the NEA.	

	complete a practice NEA in preparation for year 11.	Understand some of the techniques used for conducting research to inform engineering solutions Understand how to develop a detailed design specification that meets the needs of the identified problem. Understand how to Creat sketches and rough designs to visualise potential solution. Understand how to Create a detailed production plan including materials, tools, and processes Understand what manufacturing processes are appropriate to use to create a product Understand how to test and evaluate a finished product	Be able to gather and evaluate relevant information from various sources. Be able to write a detailed specification that takes into consideration the problem requirements. Be able to generate a range of design ideas that meets the requirements of the specification. Be able to develop a production plan using method such as Gannt charts and flow charts to plan making activities, students will be able to ensure control measures and risk assessments are in place. Be able to use a range of processes and tools to make a high-quality product. Be able to test the finished product against a range of measurable criteria and identify areas for improvement.	

Curriculum Map Year 10: History

Intent:

The History Department aims to develop **curious**, **knowledgeable** and **critical thinkers** who can ***understand*** the complexities of the past, ***evaluate*** historical evidence, ***appreciate diverse perspectives***, and ***engage thoughtfully with the world around them***.

The History Department is committed to developing knowledgeable, thoughtful and intellectually curious young people who can understand the complexities of the past and make informed judgements about the present. Through a rich and diverse curriculum, we aim to equip students with the substantive knowledge, disciplinary understanding and literacy skills needed to succeed academically and engage confidently with the wider world.

As a diverse department, we value the different experiences, perspectives and expertise that our staff bring to our teaching. We believe that all students, regardless of background, deserve access to a challenging and ambitious history curriculum that inspires curiosity, develops critical thinking and promotes high achievement.

We are committed to excellence in historical scholarship, enquiry and understanding. Through a rigorous and engaging curriculum, students will develop both substantive historical knowledge and the disciplinary skills needed to think, read, write and argue as historians.

Year 10: In Year 10, we begin with **Medicine Through Time**, tracing the development of medicine from the medieval period to the modern day. Students explore how ideas about the causes of illness, methods of treatment and approaches to public health have changed over the last 1,000 years. Along the way, they investigate the contributions of individuals such as Hippocrates, Galen, Vesalius, Pasteur and Fleming, while considering the impact of factors such as war, religion, science and technology on medical progress.

As part of this course, students also undertake a detailed study of the **British sector of the Western Front**, examining the challenges faced by medical personnel during the First World War and assessing how the demands of warfare accelerated developments in surgery, infection control and emergency treatment.

In the second half of the year, students study **Weimar and Nazi Germany, 1918-39**, exploring how Germany recovered from defeat in the First World War before descending into dictatorship under Adolf Hitler. Students investigate the strengths and weaknesses of the Weimar Republic, the challenges posed by economic and political crises, and the factors that enabled the Nazis to gain power.

They then examine life in Nazi Germany, analysing how the regime controlled the population through propaganda, censorship and terror, while also exploring the experiences of different groups within German society and the growing persecution of minorities.

By the end of Year 10, students will have developed a deeper understanding of change and continuity over time, as well as the causes and consequences of major historical events. They will continue to strengthen the skills needed for GCSE success, including analysing sources and interpretations, evaluating significance, and constructing detailed, evidence-based arguments.

Why I study History?

I study History because:

- **It helps me to develop a clear sense of identity**
- **I will appreciate the accomplishments of previous generations**
- **Learning from the past helps create a better future**

Cultural capital/enrichment:

History encourages students to question, debate and evaluate a wide range of historical issues. Throughout Year 10, students develop the advanced historical skills required for GCSE study, including analysing causes and consequences, assessing change and continuity, evaluating significance, interpreting sources and historical interpretations, and constructing detailed, evidence-based arguments. These disciplinary skills are embedded throughout the course, enabling students to think critically about how individuals, ideas and events have shaped both Britain and the wider world.

To support learning beyond the classroom, we encourage students to engage with a variety of high-quality historical resources that broaden their understanding of the topics studied. Platforms such as **Seneca Learning** and **BBC Bitesize** provide excellent opportunities for knowledge retrieval, revision and independent study. Students may also benefit from topic-specific YouTube channels and videos that reinforce classroom learning, particularly those focused on areas such as medical developments through time, the First World War and Nazi Germany. These resources can help students strengthen both their subject knowledge and examination skills.

Our Year 10 curriculum begins with **Medicine in Britain**, a fascinating study of how ideas about disease, treatment and public health have developed over the last 1,000 years. Students explore the contributions of key individuals, the impact of scientific discoveries and technological advances, and the role of factors such as war, religion and government in driving medical progress. As part of this unit, students also complete a historic environment study of the **British sector of the Western Front**, investigating how the challenges of the First World War led to important developments in medical treatment and surgery.
In the second half of the year, students study **Weimar and Nazi Germany, 1918-39**, examining Germany's transition from democracy to dictatorship. Students investigate the challenges faced by the Weimar Republic, the reasons for Hitler's rise to power, and the methods the Nazi regime used to control the German population. They also explore the experiences of different groups within German society and the increasing persecution of minorities under Nazi rule.
To enrich classroom learning, Sale High School provides a range of opportunities that encourage students to engage with history beyond their lessons and make meaningful connections between the past and present. Through the study of diverse sources, interpretations and historical perspectives, students develop a deeper understanding of themes such as power, progress, conflict, ideology and change.

By the end of Year 10, students will have developed a secure understanding of both the long-term development of medicine and the political, economic and social changes that shaped Germany between 1918 and 1939. They will also have strengthened the analytical and evaluative skills needed for success in their GCSE examinations and further historical study.

Half term	Topic	Key skills I will learn in this topic	Key knowledge	Assessment opportunities (Summative and formative) Key pieces
Autumn 1	**Medicine in Britain:** Part 1. c.1250 - c.1500: Medicine in Medieval England	Students will be able to: • Explain medieval ideas about the causes of disease and illness. • Analyse the influence of religion and ancient thinkers on medical understanding. • Assess the effectiveness of medieval treatments and preventative methods. • Evaluate the impact of the Black Death on medieval society and medicine. • Make judgements about the strengths and limitations of medieval medicine.	Students will know: • The influence of Christianity on attitudes towards illness, treatment and care. • The Theory of the Four Humours and the work of Hippocrates and Galen. • The role of physicians, apothecaries, barber surgeons and wise women. • Medieval treatments including bloodletting, purging and herbal remedies. • The role of hospitals and monasteries in caring for the sick. • The causes, symptoms, prevention and treatment of the Black Death. • Similarities and differences between responses to disease and illness in medieval England.	Knowledge Quizzes (in class and home learning) Home Learning worksheets with knowledge recall and extended writing tasks Extended Writing Tasks (Independent practice) Check Point Assessments
	Part 2. c.1500 - c.1700: The Medical Renaissance in England	• Explain how Renaissance ideas challenged traditional medical beliefs. • Analyse the significance of key individuals in advancing medical knowledge. • Assess the extent to which understanding of disease and treatment changed. • Compare medical ideas and practice between the medieval and Renaissance periods.	• The impact of the Renaissance and scientific enquiry on medicine. • The work of Andreas Vesalius and his challenge to Galen's ideas. • William Harvey's discovery of the circulation of the blood. • The contributions of Ambroise Paré and Thomas Sydenham. • The role of printing in spreading medical knowledge. • Responses to the Great Plague of 1665. • Factors that encouraged and limited medical progress during the Renaissance.	

		• Evaluate change and continuity in medicine during the Renaissance.		
Autumn 2	**Medicine in Britain:** Part 3. c. 1700 - c. 1900: Medicine in 18th & 19th Century Britain Part 4. c. 1900 - present: Medicine in Modern Britain	Students will be able to: • Explain how scientific discoveries transformed medicine during the eighteenth and nineteenth centuries. • Assess the significance of key individuals in improving understanding, treatment and prevention. • Analyse the causes of improvements in surgery, public health and hospitals. • Evaluate the importance of factors such as science, technology and government intervention. • Construct judgements about the extent of medical progress by 1900. • Explain the major developments in medicine since 1900. • Analyse the factors responsible for advances in treatment, prevention and diagnosis. • Assess the significance of scientific and technological developments.	Students will know: • Edward Jenner's development of vaccination against smallpox. • Louis Pasteur's Germ Theory and its impact on medicine. • Robert Koch's identification of specific disease-causing microbes. • The contributions of Florence Nightingale and Mary Seacole to nursing and hospital care. • The work of Humphry Davy, James Simpson and Joseph Lister in improving surgery through anaesthetics and antiseptics. • John Snow's investigation of cholera and its impact on public health. • The importance of the Public Health Acts and sanitation improvements. • How industrialisation created public health challenges and opportunities for reform. • Alexander Fleming's discovery of penicillin. • How Howard Florey and Ernst Chain developed penicillin into a widely used treatment. • The impact of modern technologies such as X-rays, scans and advanced surgical techniques.	Knowledge Quizzes (in class and home learning) Home Learning worksheets with knowledge recall and extended writing tasks Extended Writing Tasks (Independent practice) Check Point Assessments

		• Evaluate the relative importance of individuals, government and scientific research. • Reach substantiated judgements about the drivers of modern medical progress.	• Improvements in prevention through vaccination programmes and public health campaigns. • The role of the NHS and government investment in healthcare. • Developments in understanding disease through genetics and modern scientific research. • How science and technology have transformed diagnosis and treatment since 1900.	
	Historic Environment: The British sector of the Western Front, 1914-18	• Explain the medical challenges created by warfare on the Western Front. • Analyse the injuries, illnesses and conditions experienced by soldiers. • Assess the effectiveness of systems used to treat wounded soldiers. • Evaluate the significance of medical advances made during the First World War. • Use contextual knowledge to explain how the Western Front contributed to medical progress. • Construct substantiated judgements using knowledge of the historic environment.	• The nature of trench warfare and battlefield conditions on the Western Front. • Common injuries and illnesses including gunshot wounds, shrapnel injuries, infection and trench foot. • The system of evacuation from the Regimental Aid Post to Base Hospitals. • The work of the Royal Army Medical Corps (RAMC) and nursing organisations such as FANY. • The development and use of X-rays during the war. • Advances in blood transfusions and blood storage. • The contributions of individuals such as Harold Gillies and Geoffrey Keynes. • How the First World War accelerated developments in surgery, infection control and emergency medicine. • The significance of the British sector of the Western Front within the wider Medicine Through Time course.	

Spring 1	**Weimar and Nazi Germany, 1918–39** Part 1. The origins, challenges, recovery and changes of the Weimar Republic, 1918 – 1929 Part 2. Hitler's rise to power , 1920 – 1933	Students will be able to: • Explain why the Weimar Republic was created in 1918-19. • Assess the strengths and weaknesses of the Weimar Constitution. • Analyse the challenges faced by the new republic from both the political left and right. • Evaluate the impact of the crises of 1923 on Germany's stability. • Assess the significance of Stresemann's policies in securing Germany's recovery. • Reach judgements about the extent to which the Weimar Republic had recovered by 1929. • Explain how Hitler became leader of the Nazi Party. • Analyse the reasons for the growth of Nazi support during the 1920s and early 1930s.	Students will know: • The events leading to the abdication of Kaiser Wilhelm II and the creation of the Weimar Republic. • The key features, strengths and weaknesses of the Weimar Constitution, including proportional representation and Article 48. • Reasons why many Germans opposed the Weimar Republic, including the 'stab-in-the-back' myth and the Treaty of Versailles. • The threats posed by left-wing and right-wing uprisings, including the Spartacist Uprising and Kapp Putsch. • Why 1923 became the Weimar Republic's 'Year of Crisis', including hyperinflation, the Ruhr occupation and political instability. • Gustav Stresemann's role in economic recovery, including the Dawes Plan and introduction of the Rentenmark. • Stresemann's achievements in foreign policy, including the Locarno Treaties, League of Nations membership and the Young Plan. • The experiences of different groups during the 'Golden Years', including workers, women and the middle classes. • Hitler's emergence as leader of the Nazi Party and the party's early aims and beliefs. • The role of propaganda, public speaking and the SA in attracting support. • The causes, events and consequences of the Munich Putsch of 1923.	Knowledge Quizzes (in class and home learning) Home Learning worksheets with knowledge recall and extended writing tasks Extended Writing Tasks (Independent practice) Check Point Assessments

		• Assess the significance of the Munich Putsch and its consequences. • Evaluate the impact of the Great Depression on German politics. • Reach substantiated judgements about why Hitler became Chancellor in January 1933.	• How Hitler used his time in prison to reshape Nazi strategy. • How the Nazi Party was reorganised after 1923. • The impact of the Great Depression on Germany's economy and political stability. • Why support for extremist parties increased after 1929. • The reasons for Hitler's appointment as Chancellor in January 1933, including the role of political elites and backroom deals.	

Spring 2	**Weimar and Nazi Germany, 1918–39** Part 3. Nazi control of Germany through fear and propaganda	Students will be able to: • Explain how Hitler established a dictatorship between 1933 and 1934. • Analyse the methods used by the Nazis to maintain control. • Assess the importance of terror, fear and propaganda in securing obedience. • Evaluate the success of Nazi attempts to control religion, culture and public opinion. • Reach judgements about the effectiveness of Nazi control over Germany.	Students will know: • How Hitler destroyed democracy through the Reichstag Fire, Enabling Act and banning of opposition parties. • Why 1934 was a turning point, including the Night of the Long Knives and the death of President Hindenburg. • The role of the SS, Gestapo, concentration camps and the police state. • How fear and intimidation limited opposition to Nazi rule. • The work of Joseph Goebbels and the use of propaganda through newspapers, radio, film and mass rallies. • Nazi attempts to control education, culture and the media. • Nazi policies towards religion and the relationships between the regime, the churches and religious opposition. • Examples of opposition and resistance to Nazi rule and why these remained limited.	Knowledge Quizzes (in class and home learning) Home Learning worksheets with knowledge recall and extended writing tasks Extended Writing Tasks (Independent practice) Check Point Assessments

Summer 1	**Weimar and Nazi Germany, 1918–39** Part 4. Nazi policies and persecution	Students will be able to: • Explain how Nazi policies affected different groups within German society. • Assess the extent to which the Nazis won the support of women and young people. • Analyse the social and economic impact of Nazi rule on ordinary Germans. • Evaluate the development of Nazi racial policies. • Reach substantiated judgements about the extent and significance of Nazi persecution.	Students will know: • Nazi policies towards women, including the ideal role of women and policies designed to encourage marriage and childbirth. • How the Nazis attempted to control and influence young people through education and youth organisations. • Changes to employment, living standards and leisure opportunities under Nazi rule. • The aims and activities of organisations such as the Hitler Youth and League of German Girls. • Nazi attitudes towards minorities and those considered 'undesirable'. • The development of anti-Jewish policies between 1933 and 1939. • Key events including the boycott of Jewish businesses, the Nuremberg Laws and Kristallnacht. • The experiences of Jewish people in Germany as persecution became increasingly severe.	Knowledge Quizzes (in class and home learning) Home Learning worksheets with knowledge recall and extended writing tasks Extended Writing Tasks (Independent practice) Check Point Assessments
Summer 2	**Early Elizabethan England, 1558 – 1588** Part 1. Elizabeth's challenges as queen	Students will be able to: • Explain the political, social and religious situation Elizabeth inherited in 1558. • Assess the challenges Elizabeth faced as a young, unmarried female monarch. • Analyse the threats to Elizabeth's authority from both domestic and foreign rivals.	Students will know: • The structure of Elizabethan society and government, including the roles of the monarch, Privy Council, Parliament and local government. • The strengths and weaknesses of Elizabeth's position when she became queen in 1558. • The challenges Elizabeth faced at home, including questions about her legitimacy, marriage and succession. • The foreign threats posed by France and Spain during the early years of her reign.	Knowledge Quizzes (in class and home learning) Home Learning worksheets with knowledge recall and extended writing tasks Extended Writing Tasks (Independent practice) Check Point Assessments

		• Evaluate the effectiveness of Elizabeth's Religious Settlement in addressing divisions within England. • Assess the significance of Mary, Queen of Scots as a challenge to Elizabeth's rule. • Construct supported judgements about how secure Elizabeth's position was during her early reign.	• The religious divisions Elizabeth inherited following the reigns of Henry VIII, Edward VI and Mary I. • The features of the Religious Settlement of 1559, including the Act of Supremacy and Act of Uniformity. • Reasons why some Catholics and Puritans opposed the Religious Settlement. • The background, significance and impact of key Catholic challenges, including the Northern Rebellion (1569). • Why Mary, Queen of Scots was viewed as a threat to Elizabeth's authority and stability in England. • The extent to which Elizabeth had successfully overcome the main challenges of her early reign by the end of the 1560s.	

Curriculum Map Year 10: English

Intent: Across both Key Stages, we aim to ensure that our students are able to learn how to **identify** and **explore** the **impact of language** within a variety of different contexts. We explore various genres, forms, structures and purposes of literary works, in order to emphasise the importance of reading and writing as a way of **successfully engaging with the world**, both within the school context and the wider society. At the core, we strive to inspire our young learners to become **competent and confident communicators**, consciously teaching reading and writing skills within every year group, which enables us to demonstrate the progress students make when accessing a multitude of texts which have been produced across the ages for a variety of different reasons.

Through the Key Stages we have designed the curriculum to help our students both improve and refine their reading and writing skills, with a progressively more demanding set of skills taught and revisited throughout the schemes as students travel from Year 7 to Year 11, implementing things such as variations of sentence structures and increasingly difficult and interesting vocabulary. We explore the **etymology** of language and how this correlates to the context from within which it was written, aiding our students' ability to **interpret and infer** with greater confidence.

We want to inspire our students to develop their own **love of language**, to become **critical thinkers**, engaging with moral ideas, and to widen their perspectives when establishing their own impressions and opinions when exploring literary materials. Furthermore, we continue to develop our curriculum content to encourage and enable our students to be empathetic with different points of view, to be understanding when analysing and evaluating character and theme and to be able to both speak and write with clarity and purpose.

Why I study English?

I study English because:

- *It enables me to communicate freely and effectively*
- *I understand more about global culture, thought and literature*
- *Having a love of language and literature transports me to other worlds*

Cultural capital/enrichment

By studying A Christmas Carol and An Inspector Calls, students are building on their cultural capital by learning about a significant British novella and play, knowledge of the theatre (because we study form) and British history by studying the historical and societal context. By studying GCSE English Language Paper 1 students are introduced to a vast variety of key pieces of literature written by a diverse range authors from different cultural backgrounds. Studying English Language Paper 2 allows students to recognise the importance of forming their own opinion and acknowledging the perspectives of others, through a variety of non-fiction text types written across different eras from a diverse range of writers. When completing their spoken language

assessment students are taught how to use language in a formal style, appropriate to delivering information to an audience and also engage with media and research on contemporary issues.				
Half term	Topic	Key knowledge	Key skills I will learn in this topic	Assessment opportunities (Summative and formative) Key pieces
Autumn 1	Language Paper 1 Full paper Power and Conflict Poetry: English Literature Paper 2.	Students will learn: How to approach each exam question and how to manage their time effectively in the exam. A variety of different language and structural techniques and how they can impact a piece of writing How to closely analyse and evaluate an unseen fictional text. Exam technique and how to answer each individual question, including how to structure an analytical answer How to write narratives and descriptions. In the final week of the half term pupils will study 'Ozymandias' and 'London' from the AQA Power and Conflict anthology.	Students will build on their prior reading and writing skills by applying them to unseen extracts. They will also develop the ability to choose evidence thoughtfully and analyse the effects of the writer's choices in detail. Students will develop close reading skills on unseen fictional texts. Finally, students will develop an understanding of the assessment objectives for each question within the reading section and develop techniques to answer these successfully.	Students will have the opportunity to do an assessed answer for each question throughout this half term – with teacher feedback on key skills. There will be a formal assessment towards the end of the first half term and it will be a full past paper.
Autumn 2	*A Christmas Carol*, by Charles	Students will explore the social and historical context of the Victorian period and will analyse how Charles	Students will be given opportunities to develop the key skills of the Assessment Objectives, which include developing a	Students will complete a knowledge check test about the plot,

	Dickens (19th century text: Literature Paper 1) Power and Conflict Poetry: English Literature Paper 2.	Dickens used language, themes and structure to appeal to Victorian readers, as well as how he addressed social inequalities of the Victorian period. In their final exam, students will be required to analyse a theme or character within an extract and elsewhere in the play as a whole, so will study plot, characters, themes and Dickens' use of language, whilst developing skills of critical interpretation. Students will engage with an in-depth study and close annotation of the whole novella in the classroom. In the final week, pupils will study 'Extract from the Prelude' in the AQA Power and Conflict Poetry anthology.	personal response (AO1), using textual references/quotations to support interpretations (AO1), analysing language, form and structure (AO2) and considering the context behind the novella (AO3). Students will develop and refine skills in: Revision of plot and character. Understanding and successfully commenting on the message and social criticism in the text. Understanding how to structure a literary essay and develop personal response. Successfully selecting whole and judicious textual references. Referencing relevant Victorian context of 'A Christmas Carol'. The analysis and interpretation of symbols/symbolism/allegorical messages.	characters, methods, context and themes.
Spring 1	*An Inspector Calls*, by J.B. Priestley (modern text:	Students will learn: The content and contextual factors surrounding the play An Inspector Calls	Students will gain an in-depth knowledge of the play An Inspector Calls and learn how to comment critically upon it.	Pupils will complete a knowledge check test on An Inspector Calls during this half term. Questions will be based on plot,

	Literature Paper 2) Power and Conflict Poetry: English Literature Paper 2.	How to approach a literature essay without an extract. Key features of a play and how these can be manipulated by a writer for effect. Contextual information around the author Priestley, his intentions in writing An Inspector Calls, and the historical context in which it was written. How to analyse language, structural and dramatic techniques within a play and the impact these could have on an audience. At the end of the half term, pupils will study 'My Last Duchess' from the AQA Power and Conflict Poetry anthology. Teachers will also introduce the Spoken Language endorsement for English Language.	Students will continue to develop their essay writing style and ability to respond to an unseen exam question. Students will develop the ability to analyse dramatic techniques specific to the literary form of a play. They will also develop an understanding of how play writers' choices impact an audience.	character, quotations, methods, context and themes.
Spring 2	Speaking and Listening Endorsement linked to Language	Students will learn: How to create an effective piece of argumentative non-fiction writing.	Students will build their creative writing skills within the medium on non-fiction and persuasive writing.	Students will complete the Speaking and Listening Endorsement for their GCSE in English Language, this will create

	Paper 2 Question 5 writing skills. Power and Conflict Poetry: English Literature Paper 2.	How to use structural and persuasive features for effect within a creative writing piece. How to use persuasive techniques successfully to produce realistic non-fiction texts such as newspaper articles. How to create a persuasive speech on a moral or ethical issue. How to perform an engaging speech to create an impact on the audience. Pupils will study 'Charge of the Light Brigade', 'Exposure' and 'Storm on the Island' from the AQA Power and Conflict Poetry anthology.	They will learn how this writing needs to change subtly depending on the intended audience and will have the opportunity to demonstrate this through their completion of the Speaking and Listening Endorsement.	the final grade for this element. This grade will be submitted to the exam board for review. *This is a compulsory element of the GCSE and is why we incorporate speaking and listening units into our schemes of work at Key Stage 3.
Summer 1	*Macbeth*, by William Shakespeare (Literature Paper 1)	Students will develop an understanding of the classic tragedy, as well as exploring the context of the production of 'Macbeth'. They will further develop their ability to	Building on the previous Literature units already studied by this point, students will develop an understanding of how to:	Students will complete a knowledge check test on 'Macbeth' during this half term. Questions will be on plot, character,

		respond to a literary text, writing analytically through their exploration of how Shakespeare uses language, structure and dramatic techniques to present characters and themes. Students will be required to analyse a given extract and explore themes, characters and ideas presented in both the extract and elsewhere in the play, so they will be working on developing skills of written analysis in response to their reading of the play. They will develop a confident understanding of Shakespeare's characters, themes, ideas, social and historical context of the Jacobean era, as well as how to approach and interpret Shakespeare's language in order to successfully interpret and analyse this. Students will explore how ideas within the text are contextually linked and shaped by society at the time.	Identify and interpret the focus of their GCSE question, in order to craft successful responses; Carefully select relevant and valuable references from the text for the purpose of analysis; Successfully structure an essay response, practising the use of topic sentences and/or a thesis statement; Effectively analyse a writer's use of language, structure and form, using accurate subject terminology.	quotations, methods, context and themes.
Summer 2	End of year exam revision for English Language	Students will learn: - Revise key skills previously acquired in Autumn 1. - Practice exam technique.	Students will learn how to approach their exams in formal test conditions and consolidate learning of the syllabus areas being assessed.	Students will complete their end of year exams in English Language Paper 1 and English Literature Paper 1.

	Paper 1 and English Literature Paper 1: A Christmas Carol, and Macbeth. Power and Conflict Poetry: English Literature Paper 2. *Remaining poems will be studied in Year 11.*	Following the completion of the end of year exams, pupils will study 'Bayonet Charge' and 'Remains' in the AQA Power and Conflict Poetry anthology.		After the exam's students will complete analytical paragraphs on the poems studied. Learning check sheets will be used to formatively assess progress.

Curriculum Map Year 10: Religion and Ethics

Intent:

At Sale High School, our aim for Religion & Ethics is to provide students with an academically rigorous study of religious beliefs and practices, and broader ethical questions. Our curriculum empowers students to thrive in a diverse, multi-faith society by fostering a deep understanding of different religious and non-religious worldviews. Students will gain a strong disciplinary knowledge, enabling them to explore, critically, different religions and worldviews and fully analyse and evaluate different teachings and practices. This equips students to address moral and ethical dilemmas and become well-rounded individuals who are academically proficient, culturally sensitive, and morally responsible.

Sequencing:

At KS3, students will begin by exploring the fundamental philosophical inquiries such as "What is a worldview?", leading into an in-depth examination of various religious traditions, such as the Abrahamic Religions in Year 7 and the Dharmic Religions in Year 8. Students will also receive an opportunity to engage with moral philosophy, considering different ethical theories and their application to topics such as fast fashion, abortion, euthanasia, capital punishment, and more. These 'big questions' encourage students to use the disciplinary knowledge that is acquired across other humanities subjects to analyse and examine contemporary topics. This will also allow students to critically explore the significance and impact that different interpretation of scripture can bring to different worldviews and religious practices.
At KS4, students can opt to complete the Religious Education GCSE course through the AQA exam board. This GCSE course builds upon students' knowledge of Islam and Christianity, whilst also continuing to develop the disciplinary knowledge to critically analyse scripture and examine the influences of religious belief on human behaviour. It also encourages students to develop skills of empathy and cultural understanding, preparing them for thoughtful and inclusive engagement in an increasingly diverse world.

I study RE because:

- I learn more about spirituality, faith, diversity, and belief
- I feel empowered to make a positive contribution and make informed moral choices
- I learn more about how beliefs and values affect current issues and cultures.

Cultural capital/enrichment

RE provides opportunities for authentic interfaith dialogue, spending time considering the religious make-up of Great Britain, Greater Manchester and Sale, understanding the ways in which we can celebrate diversity in our local communities. The focus in year 7 is on understanding the disciplines of philosophy, theology and sociology. Pupils are encouraged to read texts for meaning and use contextual knowledge to build a deeper understanding of the meaning being conveyed. This provides cross-curricular skills which can enhance understanding in History, Geography, Literature and Languages. Pupils use statistical skills to understand data about social attitudes and religious affiliation, this provides an opportunity for the practical application of skills from mathematics. The study of religions also provides opportunities to link with MFL and geography in enhancing pupils understanding of the culture and traditions of different places. Students also benefit from an interfaith club where they can explore other cultures and traditions and celebrate the diversity of the school.

Unit	Topic (Lens)	Key skills I will learn in this topic	Key knowledge	Assessment opportunities (Summative and formative)
Unit 1	Christianity: Beliefs (Theology)	Students will be able to: - Describe the diverse Christian beliefs about God. - Explain how such beliefs influence a Christian today. - Explain the concept of the Trinity and the different roles each person of the Trinity. - Explain and evaluate the diverse Christian beliefs about creation. - Assess the belief in the incarnation and the role of Christ in salvation.	Students will know: **Key beliefs about:** - The Nature of God: God as omnipotent, loving and just, and the problem of evil and suffering. - The oneness of God and the Trinity: Father, Son and Holy Spirit. - Different Christian beliefs about creation including the role of Word and Spirit (John 1:1-3 and Genesis 1:1-3). - Different Christian beliefs about the afterlife and their importance, including: resurrection and life after death; judgement, heaven and hell. **Jesus Christ and salvation:** **Beliefs and teachings about:** - the incarnation and Jesus as the Son of God - the crucifixion, resurrection and ascension - sin, including original sin - the means of salvation, including law, grace and Spirit - the role of Christ in salvation including the idea of atonement.	End of Unit Assessment: Exam style paper: 1. Multiple choice, 2. State beliefs; 3. Explain concepts or influences 4. Explain concepts or influences (+ SOWA) 5. Evaluate the statement: ***"Belief in Jesus is all that Christians need to be saved from sin."***

Unit 2	Christianity: Practices (Theology & Sociology)	Students will be able to: - Describe the different forms of worship and prayer. - Critically assess the significance of different forms of worship and prayer. - Explain the importance of sacraments. - Critically evaluate the difference and significance of infant and believers baptism. - Explain the significance of the Eucharist as a tool for expressing belief. - Critically evaluate the importance of pilgrimage in a Christian's life and how that impacts faith. - Describe role of the Church in the local community. - Explain the importance of mission, evangelism and Church growth. Explain and evaluate the importance of the worldwide Church and the work for reconciliation and against persecution.	Students will know: **Worship and festivals** - Different forms of worship and their significance: liturgical, non-liturgical and informal, including the use of the Bible, private worship. - Prayer and its significance, including the Lord's Prayer, set prayers and informal prayer. **The role and meaning of the sacraments:** - The sacrament of baptism and its significance for Christians - The sacrament of Holy Communion/ Eucharist and its significance for Christians. **The role and importance of pilgrimage and celebrations including:** - Two contrasting examples of Christian pilgrimage: Lourdes and Iona - The celebrations of Christmas and Easter. **The role of the church in the local and worldwide community** - The role of the Church in the local community, including food banks and street pastors. - The place of mission, evangelism and Church growth. - The importance of the worldwide Church including: working for reconciliation, responding to persecution - The work of one of the following: Catholic Agency For Overseas Development (CAFOD), Christian Aid, Tearfund.	Exam style paper: 1. Multiple choice, 2. State beliefs; 3. Explain concepts or influences 4. Explain concepts or influences (+ SOWA) 5. Evaluate the statement: ***"The celebration of Holy Communion (Eucharist) is the most important part of Christian life.'*** Winter Exam: Part AQA exam papers including Christian belief and practices.

Unit 3	Islam: Beliefs (Theology)	Students will be able to: - Explain the importance of recognising the diverse beliefs within Islam. - Explain the six articles of faith in Sunni Islam and the five roots of Usul-ad-Din in Shi'a Islam. - Describe the diverse Muslim beliefs about Allah. - Explain how such beliefs influence a Muslims today. - Evaluate the role of angels and critically assess the influence of angels of Muslims today. - Explain and critically evaluate the concept of predestination and human freedom in relation to beliefs of Akhirah. - Critically assess the importance of Risalah and Holy Books in Islam.	Students will know: **Key beliefs about:** - The six articles of faith in Sunni Islam and five roots of Usul ad-Din in Shi'a Islam, including key similarities and differences. - Tawhid (the Oneness of God), Qur'an Surah 112. - The nature of God: omnipotence, beneficence, mercy, fairness and justice/Adalat in Shi'a Islam, including different ideas about God's relationship with the world: immanence and transcendence. - Angels, their nature and role, including Jibril and Mika'il. - Predestination and human freedom and its relationship to the Day of Judgement. - Akhirah (life after death), human responsibility and accountability, resurrection, heaven and hell. **Authority:** - Risalah (Prophethood) including the role and importance of Adam, Ibrahim and Muhammad. **The holy books:** - Qur'an: revelation and authority - the Torah, the Psalms, the Gospel, the Scrolls of Abraham and their authority. - The imamate in Shi'a Islam: its role and significance.	Exam style paper: 1. Multiple choice, 2. State beliefs; 3. Explain concepts or influences 4. Explain concepts or influences (+ SOWA) 5. Evaluate the statement: ***"Tawhid (the Oneness of God) is the most important Muslim belief."***

Unit 4	Islam: Practices (Theology & Sociology)	Students will be able to: - Explain each of the Five Pillars of Islam and their significance, founded on teachings of the Qur'an. - Explain the practice and purpose of Salah, including the rituals surrounding the practice of prayer. - Explain the significance of Ramadan and the origins, duties, benefits and exceptions of Sawm. - Explain the practice and importance of Zakat (Khums – Shi'a), including the origins, duties and benefits. - Explain the practice and purpose of Hajj, including the significance of the journey to Makkah and the actions performed. - Explain and critically assess the different understandings of Jihad, including the origins, influences and conditions. Critically assess the significance of various Muslim festivals, such as Id-ul-Adha, Id-ul-Fitr and Ashura, including their importance for Muslims in Great Britain today.	Students will know: **Worship:** - Five Pillars of Sunni Islam and the Ten Obligatory Acts of Shi'a Islam - Shahadah: declaration of faith and its place in Muslim practice. - Salah and its significance: how and why Muslims pray including times, directions, ablution (wudu), movements (rak'ahs) and recitations; salah in the home and mosque and elsewhere; Friday prayer: Jummah; key differences in the practice of salah in Sunni and Shi'a Islam, and different Muslim views about the importance of prayer. **Duties and festivals** - Sawm: the role and significance of fasting during the month of Ramadan including origins, duties, benefits of fasting, the exceptions and their reasons, and the Night of Power, Qur'an 96:1-5. - Zakah: the role and significance of giving alms including origins, how and why it is given, benefits of receipt, Khums in Shi'a Islam. - Hajj: the role and significance of the pilgrimage to Makkah including origins, how hajj is performed, the actions pilgrims perform at sites including the Ka'aba at Makkah, Mina, Arafat, Muzdalifah and their significance. - Jihad: different understandings of jihad: the meaning and significance of greater and lesser jihad; origins, influence and conditions for the declaration of lesser jihad.	Exam style paper: 1. Multiple choice, 2. State beliefs; 3. Explain concepts or influences 4. Explain concepts or influences (+ SOWA) 5. Evaluate the statement: ***"Completing the hajj is the most important duty for a Muslim."*** Summer Mock Exam: AQA Religious Studies Paper 1 (full)

			Festivals and commemorations and their importance for Muslims in Great Britain today, including the origins and meanings of Id-ul-Adha, Id-ul-Fitr, Ashura.	

Curriculum Map Year 10: Geography

Intent: Geography at Sale High School is intended to provide a wealth of knowledge about the world. We investigate topics on various scales, in locations close to home and far away. This helps us to appreciate the beauty, excitement, wonder, and problematic nature of the world we live in. Geography lessons encourage students to apply their own knowledge, understanding and judgement of theories studied in class. We also gain knowledge from practical experiences and at times we debate critical issues. From this we hope that each student can gain their own unique but well-informed understanding of how they are shaping the world around them, and how it shapes them in return.

In Year 10 students begin their studies of GCSE Geography (AQA exam board). They will cover sections of topics from all units on Paper 1 (physical geography) and Paper 2 (human geography), as well as complete fieldwork, which will be examined on paper 3. Students develop their knowledge of key geographical processes and analyse these in depth and in different contexts and scales from KS3. Case studies take them far and wide: Philippines, Nigeria and the Amazon, as well as studying locations in the UK, including Manchester.

Why do I study Geography?

- It helps me to understand the wider world.
- I can better appreciate diversity.
- I will become a global citizen who can make a positive change.

Cultural capital/enrichment

Fieldwork opportunities – Investigations into river management on the River Ladybrook and a study of the regeneration of Salford Quays.
Read – *A Short History of Nearly Everything* by Bill Bryson, *Can We Protect People From Natural Disasters?* by Earth Debate, *No One Is Too Small To Make A Difference* by Greta Thunberg, *There Is No Planet B* by Mike Breners-Lee, *This is Planet Earth* by New Scientist
Watch – *Planet Earth – Jungles* on BBC iPlayer, *Down to Earth with Zac Efron* on Netflix, *Slumdog Millionaire* on Google Play or Disney+
Do – walk through a woodland and consider the producer and consumer species that exist there, also consider how the climate has affected these species and how humans may have intervened and affected them in some way. Visit Manchester city centre and consider the similarities and differences between Manchester and Mumbai's opportunities and challenges. Walk along the River Mersey and consider how the local community is being protected from flooding.

Half Term	Topic	Key knowledge	Key skills I will learn in this topic	Assessment opportunities (Summative and formative) Key pieces
1	Paper 2 Section B Part i: **The Changing Economic World - Theory**	• Different ways of classifying parts of the world according to their level of economic development and quality of life. • Different economic and social measures of development: gross national income (GNI) per head, birth and death rates, infant mortality, life expectancy, people per doctor, literacy rates, access to safe water, Human Development Index (HDI). Limitations of economic and social measures. • Link between stages of the Demographic Transition Model and the level of development. • Causes of uneven development: physical, economic and historical. • Consequences of uneven development: disparities in wealth and health, international migration. • An overview of the strategies used to reduce the development gap: investment, industrial development and tourism, aid, using intermediate technology, Fairtrade, debt relief, microfinance loans. • How the growth of tourism in **Jamaica** helps to reduce the development gap.	• Data analysis • Demographic Transition Model and Population Pyramids • Desire line maps / proportional flow • Using facts to describe. • Thorough explanations • Evaluation of strategies	• Exam Q to be marked by the teacher and feedback given: Using the Figure and your own knowledge, evaluate the effectiveness of tourism in reducing the development gap. [6 marks] SP2 • This unit will be tested in checkpoint quizzes, mid-year and end of year exams in Y10. • Teacher to use formative assessment to check understanding in each lesson. • Frequent use of whole class feedback as appropriate.
1	Paper 1 Section A Part ii **Weather Hazards and Climate Change**	• General atmospheric circulation model: pressure belts and surface winds. • Global distribution of tropical storms (hurricanes, cyclones, typhoons). An understanding of the relationship between tropical storms and general atmospheric circulation. • Causes of tropical storms and the sequence of their formation and development. The structure and features of a tropical storm. • How climate change might affect the distribution, frequency and intensity of tropical storms. • Primary and secondary effects of tropical storms. Immediate and long-term responses to tropical storms. Use a named example of a tropical storm to show its effects and responses. • How monitoring, prediction, protection and planning can reduce the effects of tropical storms. • An overview of types of weather hazard experienced in the UK.	• Latitude and longitude • Diagrams • Satellite images • Magnitude and frequency • Qualitative and quantitative data • Line graphs	• Exam Q to be marked by the teacher and feedback given: Using the Figure and your own understanding… To what extent is climate change the result of human actions? [9 marks] 2021 • This unit will be tested in checkpoint quizzes, mid-year and end of year exams in Y10. • Teacher to use formative assessment to check understanding in each lesson.

		• An example of a recent extreme weather event • in the UK to illustrate: causes, social, economic and environmental impacts, how management strategies can reduce risk. • Evidence that weather is becoming more extreme in the UK. Evidence for climate change from the beginning of the Quaternary period to the present day. • Possible causes of climate change: natural factors – orbital changes, volcanic activity and solar output. Human factors – use of fossil fuels, agriculture and deforestation. • Overview of the effects of climate change on people and the environment. • Managing climate change: mitigation – alternative energy production, carbon capture, planting trees, international agreements. Adaptation – change in agricultural systems, managing water supply, reducing risk from rising sea levels.		• Frequent use of whole class feedback as appropriate.
2	Paper 2 Section A Part ii: **Urban Issues and Challenges – A UK City: Manchester**	• Overview of the distribution of population and the major cities in the UK. • Illustrate the location and importance of **Manchester** in the UK and the wider world; and impacts of national and international migration on the growth and character of the city. • How urban change has created social and economic opportunities in Manchester: cultural mix, recreation and entertainment, employment, integrated transport systems. • How urban change has created environmental opportunities in Manchester: urban greening • How urban change has created social and economic challenges in Manchester: urban deprivation, inequalities in housing, education, health and employment • How urban change has led to environmental challenges: dereliction, building on brownfield and greenfield sites, waste disposal • The impact of urban sprawl on the rural–urban fringe, and the growth of commuter settlements, such as **Sale**. • An example of an urban regeneration project (**Salford Quays**) to show: reasons why the area needed regeneration. The main features of the project. • Features of sustainable urban living in **Freiburg, Germany**: water and energy conservation, waste recycling, creating green space.	• Use of qualitative and quantitative data. • Use of OS maps – inferring human activity from evidence, identifying locations from photographs, labelling, four and six-figure grid references.	• This unit will be tested in checkpoint quizzes, mid-year and end of year exams in Y10. • Teacher to use formative assessment to check understanding in each lesson. • Frequent use of whole class feedback as appropriate.

		• How urban transport strategies are used to reduce traffic congestion in **Freiburg**.		
3	Paper 1 Section B Part i: **The Living World - Ecosystems and Tropical Rainforests**	• How **Epping Forest** illustrates the concept of interrelationships within a natural system, an understanding of producers, consumers, decomposers, food chain, food web and nutrient cycling. • The balance between components. The impact on the ecosystem of changing one component. • An overview of the distribution and characteristics of large scale natural global ecosystems. • The physical characteristics of a tropical rainforest. The interdependence of climate, water, soils, plants, animals and people. How plants and animals adapt to the physical conditions. Issues related to biodiversity. • Changing rates of deforestation. • How the example of the **Amazon Rainforest** illustrates: causes of deforestation – subsistence and commercial farming, logging, road building, mineral extraction, energy development, settlement, population growth. Impacts of deforestation – economic development, soil erosion, contribution to climate change. • Value of tropical rainforests to people and the environment. • Strategies used to manage the rainforest sustainably – selective logging and replanting, conservation and education, ecotourism and international agreements about the use of tropical hardwoods, debt reduction.	• Food webs and nutrient cycling diagrams • Topological maps • Annotating diagrams • Analysing photographs • Choropleth maps • Bar charts • Describing causes	• Exam Q to be marked by the teacher and feedback given: Using Figure 6 and your own understanding, suggest how plants are adapted to the climate in tropical rainforests. [6 marks] 2022 • This unit will be tested in checkpoint quizzes and end of year exam in Y10. • Teacher to use formative assessment to check understanding in each lesson. • Frequent use of whole class feedback as appropriate.
4	Paper 2 Section B Part i: **The Changing Economic World – Nigeria**	• The example of **Nigeria** to illustrate: the location and importance of the country, regionally and globally. • The wider political, social, cultural and environmental context within which Nigeria is placed. • The changing industrial structure in Nigeria. The balance between different sectors of the economy. How manufacturing industry can stimulate economic development. • The role of transnational corporations (TNCs) in relation to industrial development. Advantages and disadvantages of Shell Oil to the host country. • The changing political and trading relationships with the wider world. • International aid: types of aid, impacts of aid on Nigeria.	• Atlas maps • Latitude and longitude • Proportional bar charts • Flow diagrams • Data analysis • Reading secondary sources	• Exam Q to be marked by the teacher and feedback given: Using a case study of a LIC or NEE country, explain the link between Transnational Corporations and industrial development in the country. [6 marks] 2018 • This unit will be tested in checkpoint quizzes and end of year exam in Y10.

		• The environmental impacts of economic development. • The effects of economic development on quality of life for the population.		• Teacher to use formative assessment to check understanding in each lesson. • Frequent use of whole class feedback as appropriate.
5	Paper 1 Section C Part ii: **UK Physical Landscapes - Rivers**	• The long profile and changing cross profile of a river and its valley. • Fluvial processes: erosion – hydraulic action, abrasion, attrition, solution, vertical and lateral erosion. Transportation – traction, saltation, suspension and solution. Deposition – why rivers deposit sediment. • Characteristics and formation of landforms resulting from erosion – interlocking spurs, waterfalls and gorges. Characteristics and formation of landforms resulting from erosion and deposition – meanders and ox-bow lakes. Characteristics and formation of landforms resulting from deposition – levées, flood plains and estuaries. • **The River Tees** – identifying its major landforms of erosion and deposition. • How physical and human factors affect the flood risk – precipitation, geology, relief and land use. • The use of hydrographs to show the relationship between precipitation and discharge. • The costs and benefits of the following management strategies: hard engineering – dams and reservoirs, straightening, embankments, flood relief channels. Soft engineering – flood warnings and preparation, flood plain zoning, planting trees and river restoration. • Flood management scheme in **Banbury** to show: why the scheme was required, the management strategy, the social, economic and environmental issues.	• OS map analysis and describing river features on OS maps • Drawing and annotating diagrams • Cost-benefit analysis • Using key terms • Photograph analysis • Use of bivariate data, interpolate and extrapolate. • Use of measures of central tendancy.	• Exam Q to be marked by the teacher and feedback given: Using the Figure and your own understanding… Explain how river features are created by erosion and deposition. [6 marks] 2024 • This unit will be tested in checkpoint quizzes and end of year exam in Y10. • Teacher to use formative assessment to check understanding in each lesson. • Frequent use of whole class feedback as appropriate.
6	Paper 3 Section B: **Fieldwork**	• The factors that need to be considered when selecting suitable questions/hypotheses for geographical enquiry. The geographical theory/concept underpinning the enquiry. Appropriate sources of primary and secondary evidence, including locations for fieldwork. The potential risks of both human and physical fieldwork and how these risks might be reduced. • Setting and testing hypotheses • Writing risk assessments	• Data collection – primary and secondary data • Data presentation – graphs, radar diagrams, box plot graphs – drawing,	• Exam Qs taken from Paper 3 past exam papers to be marked by the teacher and feedback given. • This unit will be tested in checkpoint quizzes and end of year exam in Y10.

		• Analysing data • Writing conclusions • Evaluating	analysing and evaluating these • Application of skills to unfamiliar contexts	• Teacher to use formative assessment to check understanding in each lesson. • Frequent use of whole class feedback as appropriate.

This Scheme of Work is designed to work alongside the following resources which are recommended to benefit and support the delivery of the AQA GCSE Specification theory content in school. As well as the student's primary sport, the department offer a rock climbing course and deliver handball within practical sessions, to ensure all students are able to perform three sports at the required level.

PowerPoints: Created by department members

Text Book: Howitt, R. & Murray M. (2016). AQA GCSE (9-1) PE. Hodder & Stoughton. ISBN: 9781471859526

Unit & Topic	Learning & Assessment Objectives	Content	Resources	Delivery suggestions
3.1.3 Physical Training	AO1, AO2, AO3 Paper 1	**3.1.3.1. The relationship between health and fitness and the role exercise plays in both.** - Relationship between Health & Fitness. - Definitions. **3.1.3.2. Components of fitness, benefits for sport and how fitness is measured and improved.** - Definitions of all 10 components of fitness. -Linking sports and activities to components of fitness.	-PowerPoint -YouTube -Text Book pages 42 – 49.	-Delivery of **'Components of Fitness'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.
	AO1, AO2, AO3 Paper 1	**3.1.3.2. Fitness Testing** – Introducing the tests used to measure each of the 10 components of fitness. -Reasons for and limitations of fitness testing. **3.1.4. Data analysis.** - Introducing different types of data and interpretation linked to fitness tests.	-PowerPoint -YouTube -Text Book pages 51 – 61.	-Delivery of **'Fitness Testing'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment. -Practical engagement with a variety of fitness tests to support data analysis and deepen k&u of fitness tests.
	AO1, AO2, AO3 Paper 1	**3.1.3.3. The principles of training and their application to personal exercise/training programmes.** - Introduction of SPORT and FITT principles.	-PowerPoint -YouTube -Text Book pages 61 – 72.	-Delivery of **'Principles of Training'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work.

		-Application of the principles of training. - Types of training. Introducing the 7 different methods of training with examples. - Advantages and disadvantages of the different types of training with examples.		-Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.
	AO1, AO2, AO3 Paper 1	**3.1.3.4. Optimising training and injury prevention** -Introduction of aerobic and anaerobic respiration. -Calculating and understanding the training thresholds for aerobic and anaerobic training. -Altitude training concepts.	-PowerPoint -YouTube -Text Book pages 67 and 73.	-Delivery of **'Aerobic and Anaerobic Training Thresholds'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.
	AO1, AO2, AO3 Paper 1	**3.1.3.4. Optimising training and injury prevention.** - Injury prevention methods - Seasonal aspects – training seasons introduced and explained. **3.1.3.5 Effective use of warm ups and cool down.** -Warm ups and cool down methods introduced and explained.	-PowerPoint -YouTube -Text Book pages 73 – 78.	-Delivery of **'Injury Prevention and Training Seasons'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment. -Practical tasks linked to delivery of warm ups and cool downs.
3.2.2 Socio-Cultural Influences	AO1, AO2, AO3 Paper 2	**3.2.2.1 Engagement patterns of different social groups and the factors affecting participation.** -Engagement patterns of different social groups affecting participation.	-PowerPoint -YouTube -Text Book pages 102 – 112.	-Delivery of **'Engagement and Participation'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment. -Questionnaire task to gather quantitative data for analysis.
	AO1, AO2, AO3 Paper 2	**3.2.2.3 Ethical and socio-cultural issues in physical activity and sport.**	-PowerPoint -YouTube	-Delivery of **'Ethical Issues'** PowerPoint resource.

		-Conduct of performers. - Prohibited substances. - Prohibited methods and PEDS. - Advantages and disadvantages of taking PEDS. - Spectator behaviour. - Hooliganism – Reasons why this occurs and strategies to combat hooliganism.	-Text Book pages 126 – 134.	-Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment. -School trip to a live sports event to experience the atmosphere.
	AO1, AO2, AO3 Paper 2	**3.2.2.2 Commercialisation of physical activity and sport.** -Commercialisation - Sponsorship and the media - Positive and negative impacts of sponsorship and the media - Positive and negative impacts of technology	-PowerPoint -YouTube -Text Book pages 113 – 125.	-Delivery of **'Commercialisation'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.
3.1.1 Applied Anatomy and Physiology	AO1, AO2, AO3 Paper 1	**3.1.1.1 The structure and functions of the musculoskeletal system.** -Bones -Structure of the skeleton -Functions of the skeleton -Muscles of the body	-PowerPoint -YouTube -Text Book pages 2 – 9.	-Delivery of **'Structure and functions of the musculoskeletal system'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.

		-Joints (Synovial and freely-movable) and the different types of joints -How movement occurs		
	AO1, AO2, AO3 Paper 1	**3.1.1.2 The structure and functions of the cardiorespiratory system.** -The pathway of air -Gaseous exchange -Blood vessels -Structure of the heart -Cardia cycle, cardiac output and stroke volume -Mechanics of breathing -Interpretation of a spirometer trace	-PowerPoint -YouTube -Text Book pages 10 – 18.	-Delivery of **'Structure and functions of the cardiorespiratory system'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.
	AO1, AO2, AO3 Paper 1	**3.1.1.3 Anaerobic and aerobic exercise.** -Aerobic and anaerobic terms and use in exercise -Oxygen consumption and EPOC -The recovery process. **3.1.1.4 Short and long term effects of exercise.** -Immediate effects of exercise -Short-term effects of exercise	-PowerPoint -YouTube -Text Book pages 19 – 26.	-Delivery of **'Aerobic, anaerobic and the effects of exercise'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.

		-Long-term effects of exercise		
3.2.1 Sport Psychology	AO1, AO2, AO3 Paper 2	**3.2.1.1 Classification of skills (basic/complex, open/closed).** -Skills and ability -Classification of skills -Type of goals (performance or outcome) **3.2.1.2 The use of goal setting and SMART targets to improve and/or optimise performance.** -Evaluating performance and outcomes -SMART targets	-PowerPoint -YouTube -Text Book pages 79 – 85.	-Delivery of **'Classification of Skills and SMART Targets'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.
3.2.1 Sport Psychology	AO1, AO2, AO3 Paper 2	**3.2.1.3 Basic information processing.** -Basic information processing model -Input/Output/Decision making processes **3.2.1.4 Guidance and feedback on performance.** -Types of guidance and feedback and their effectiveness.	-PowerPoint -YouTube -Text Book pages 88 - 93.	-Delivery of **'Information Processing and Feedback'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.
3.2.1 Sport Psychology	AO1, AO2, AO3 Paper 2	**3.2.1.5 Mental Preparation for Performance.** -Arousal and the Inverted-U Theory -Optimal arousal and stress management.	-PowerPoint -YouTube -Text Book pages 94 – 101.	-Delivery of **'Mental Preparation for Performance'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.

3.2.1 Health, Fitness and well-being	AO1, AO2, AO3 Paper 2	**3.2.3.1 Physical, emotional, social health, fitness and well-being.** -Linking physical activity and exercise to health, well-being and fitness. **3.2.3.2. Consequences of a sedentary lifestyle.** -Sedentary lifestyles introduced -Obesity and its effect on performance -Somatotypes	-PowerPoint -YouTube -Text Book pages 135 – 147.	-Delivery of **'Health and Well-Being and the Consequences of a Sedentary Lifestyle'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.
3.2.1 Health, Fitness and well-being	AO1, AO2, AO3 Paper 2	**3.2.3.3 Energy, Diet and Nutrition.** -Energy use -Nutrition and balanced diet -Nutrition and the role of carbohydrates, proteins, fats and vitamins/minerals -Maintaining water balance (hydration)	-PowerPoint -YouTube -Text Book pages 147 - 153. -Examples of healthy vs non-healthy foods.	-Delivery of **'Energy, Diet and Nutrition'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment.
3.1.2 Movement analysis	AO1, AO2, AO3 Paper 1	**3.1.2.1 Lever systems, examples of their use in activity and the mechanical advantage they provide in movement.** -First, second and third class lever systems within sports examples -Mechanical advantages linked to the lever systems -Analysis of basic sporting movements **3.1.2.2 Planes and axes of movement.**	-PowerPoint -YouTube -Text Book pages 27 - 41.	-Delivery of **'Movement Analysis in Sport'** PowerPoint resource. -Range of strategies for 'reflection tasks', including individual, paired and group work. -Use of exam-style questions in exam conditions or as homework tasks – mark schemes to be used as peer/self-assessment. -Practical-based sessions to observe movement patterns across a range of different activities.

		-Introduction of the different planes (frontal, transverse, sagittal) and axes (longitudinal, transverse, sagittal) of movement in sport.		

YEAR 7

Wk beg	3/9	7/9	14/9	21/9	28/9	5/10	12/10	19/10	2/11	9/11	16/11	23/11	30/11	7/12	14/12	4/1	11/1	18/1	25/1	1/2	8/2	22/2	1/3	8/3	15/3	22/3	13/4	19/4	26/4	3/5	10/5	17/5	24/5	7/6	14/6	21/6	28/6	5/7	12/7
	Autumn Term															Spring Term																					Summer Term					
Week	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6
	Block 1 (Core rules + skills)															Block 2 (Core rules + skills)												Block 3 (Core rules + skills)												
	Half Term 1									Half Term 2						Half Term 3						Half term 4						Half Term 5							Half term 6					
Boys 1	Football			Rugby			Gynnastics			Basketball						Fitness			OAA			Lacrosse			Handball			Athletics			Cricket			Softball			Badminton		
Girls 1	Netball			Dance			Rugby			Gymastics						Badminton			Lacrosse			OAA			Football			Rounders			Athletics			Cricket			Fitness		
Boys 2	Rugby			Gymnastics			Basketball			Football						Lacrosse			Handball			Fitness			OAA			Badminton			Softball			Athletics			Cricket		
Girls 2	Dance			Badminton			Netball			Rugby						OAA			Fitness			Football			Lacrosse			Handball			Rounders			Athletics			Gymnastics		
KPI's	Warm up						Muscles									Effects of exercise						Training zones						Components of fitness							Skeleton					
	KPI's assessment matrix to underpin each lesson																																						
Wet Weather Lessons Boys 1	Indoor football			Badminton			Fitness			Leadership/Badminton						Fitness			Badminton			Leadership			Handball			Badminton			Fitness			Leadership			Handball		
Wet Weather Lessons Girls 1	Benchball			Dance			Badminton/Leadership			Fitness						Badminton			Fitness			OAA			Dance			Fitness			Leadership			Fitness			Fitness		
Wet Weather Lessons Boys 2	Indoor football			Gymnastics			Fitness			Leadership/Badminton						Fitness			Badminton			Ledership			Handball			Badminton			Fitness			Leadership			Handball		
Wet Weather Lessons Girls 2	Dance			Badminton			Dance/Leadership			Fitness						Dance			Fitness			Leadership			Fitness			Dance			Leadership			Fitness			Dance		

YEAR 8

Wk beg	3/9	7/9	14/9	21/9	28/9	5/10	12/10	19/10	2/11	9/11	16/11	23/11	30/11	7/12	14/12	4/1	11/1	18/1	25/1	1/2	8/2	22/2	1/3	8/3	15/3	22/3	13/4	19/4	26/4	3/5	10/5	17/5	24/5	7/6	14/6	21/6	28/6	5/7	12/7
	Autumn Term															Spring Term																					Summer Term					
Week	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6
	Block 1 (Advanced rules + skills)															Block 1 (Advanced rules + skills)												Block 1 (Advanced rules + skills)												
	Half Term 1									Half Term 2						Half Term 3						Half term 4						Half Term 5							Half term 6					
Boys 1	Football			Rugby			Gynnastics			Basketball						Fitness			OAA			Lacrosse			Handball			Athletics			Cricket			Softball			Badminton		
Girls 1	Netball			Dance			Rugby			Gymastics						Badminton			Lacrosse			OAA			Football			Rounders			Athletics			Cricket			Fitness		
Boys 2	Rugby			Gymnastics			Basketball			Football						Lacrosse			Handball			Fitness			OAA			Badminton			Softball			Athletics			Cricket		
Girls 2	Dance			Badminton			Netball			Rugby						OAA			Fitness			Football			Lacrosse			Handball			Rounders			Athletics			Gymnastics		
KPI's	Warm up						Muscles									Effects of exercise						Training zones						Components of fitness							Skeleton					
	KPI's assessment matrix to underpin each lesson																																						
Wet Weather Lessons Boys 1	Indoor football			Badminton			Fitness			Leadership/Badminton						Fitness			Badminton			Leadership			Handball			Badminton			Fitness			Leadership			Handball		
Wet Weather Lessons Girls 1	Benchball			Dance			Badminton/Leadership			Fitness						Badminton			Fitness			OAA			Dance			Fitness			Leadership			Fitness			Fitness		
Wet Weather Lessons Boys 2	Indoor football			Gymnastics			Fitness			Leadership/Badminton						Fitness			Badminton			Ledership			Handball			Badminton			Fitness			Leadership			Handball		
Wet Weather Lessons Girls 2	Dance			Badminton			Dance/Leadership			Fitness						Dance			Fitness			Leadership			Fitness			Dance			Leadership			Fitness			Dance		

YEAR 9

Wk beg	3/9	7/9	14/9	21/9	28/9	5/10	12/10	19/10	2/11	9/11	16/11	23/11	30/11	7/12	14/12	4/1	11/1	18/1	25/1	1/2	8/2	22/2	1/3	8/3	15/3	22/3	13/4	19/4	26/4	3/5	10/5	17/5	24/5	7/6	14/6	21/6	28/6	5/7	12/7
	Autumn Term															Spring Term																					Summer Term					
Week	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6
	Block 1 (Tactics, Outwitting opponents)															Block 1 (Tactics, Outwitting opponents)												Block 1 (Tactics, Outwitting opponents)												
	Half Term 1									Half Term 2						Half Term 3						Half term 4						Half Term 5							Half term 6					
Boys 1	Football			Rugby			Gynnastics			Basketball						Fitness			OAA			Lacrosse			Handball			Athletics			Cricket			Softball			Badminton		
Girls 1	Netball			Dance			Rugby			Gymastics						Badminton			Lacrosse			OAA			Football			Rounders			Athletics			Cricket			Fitness		
Boys 2	Rugby			Gymnastics			Basketball			Football						Lacrosse			Handball			Fitness			OAA			Badminton			Softball			Athletics			Cricket		
Girls 2	Dance			Badminton			Netball			Rugby						OAA			Fitness			Football			Lacrosse			Handball			Rounders			Athletics			Gymnastics		
KPI's	Warm up						Muscles									Effects of exercise						Training zones						Components of fitness							Skeleton					
	KPI's assessment matrix to underpin each lesson																																						
Wet Weather Lessons Boys 1	Indoor football			Badminton			Fitness			Leadership/Badminton						Fitness			Badminton			Leadership			Handball			Badminton			Fitness			Leadership			Handball		
Wet Weather Lessons Girls 1	Benchball			Dance			Badminton/Leadership			Fitness						Badminton			Fitness			OAA			Dance			Fitness			Leadership			Fitness			Fitness		
Wet Weather Lessons Boys 2	Indoor football			Gymnastics			Fitness			Leadership/Badminton						Fitness			Badminton			Ledership			Handball			Badminton			Fitness			Leadership			Handball		
Wet Weather Lessons Girls 2	Dance			Badminton			Dance/Leadership			Fitness						Dance			Fitness			Leadership			Fitness			Dance			Leadership			Fitness			Dance		

YEAR 10

Wk beg	3/9	7/9	14/9	21/9	28/9	5/10	12/10	19/10	2/11	9/11	16/11	23/11	30/11	7/12	14/12	4/1	11/1	18/1	25/1	1/2	8/2	22/2	1/3	8/3	15/3	22/3	13/4	19/4	26/4	3/5	10/5	17/5	24/5	7/6	14/6	21/6	28/6	5/7	12/7
	Autumn Term															Spring Term																					Summer Term					
Week	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6
	Block 1 (Sports Education/Leadership Model)															Block 1 (Sports Education/Leadership Model)												Block 1 (Sports Education/Leadership Model)												
	Half Term 1									Half Term 2						Half Term 3						Half term 4						Half Term 5							Half term 6					
Boys 1	Football			Basketball			Handball									Rugby			HRF			Badminton						Cricket			Athletics			Softball					
Girls 1	Netball			Dance			HRF									Lacrosse			OAA			Tag Rugby						Rounders			Athletics			Badminton/Multi					
Boys 2	Basketball			Rugby			Football									HRF			Badminton			OAA						Athletics			Softball			I					
Girls 2	Dance			OAA			Netball									Badminton			Lacrosse			HRF						Badminton/Ath			Rounders			Multi Sports					
Girls 3	Tag rugby			Netball			Dance									OAA			Football			Lacrosse						Rounders			Multi			Athletics					
KPI's	Warm up			Muscles			Fitness components									Aerobic/Anaerobic			Effects of exercise			Training zones						Cardiovascular			Respiratory			Skeleton					
	KPI's assessment matrix to underpin each lesson																																						
Wet Weather Lessons Boys 1	Indoor football			Basketball			Leadership									Fitness			Badminton/Leadership			Badminton/Leadership						Fitness			Leadership			Handball					
Wet Weather Lessons Girls 1	Benchball			Dance			Fitness									Dance			Benchball			Benchball						Dance			Fitness			Dance					
Wet Weather Lessons Boys 2	Indoor football			Basketball			Leadership									Fitness			Badminton/Leadership			Badminton/Leadership						Fitness			Leadership			Handball					
Wet Weather Lessons Girls 2	Dance			Fitness			Fitness									Badminton			Benchball			Fitness/Leadership						Badminton			Fitness			Fitness					
Wet Weather Lessons Girls 3	Dance			Fitness			Leadership									Badminton			Dance/Leadership			Fitness/Leadership						Badminton			Leadership			Fitness					

YEAR 11

Wk beg	3/9	7/9	14/9	21/9	28/9	5/10	12/10	19/10	2/11	9/11	16/11	23/11	30/11	7/12	14/12	4/1	11/1	18/1	25/1	1/2	8/2	22/2	1/3	8/3	15/3	22/3	13/4	19/4	26/4	3/5	10/5	17/5	24/5	7/6	14/6	21/6	28/6	5/7	12/7
	Autumn Term															Spring Term																					Summer Term					
Week	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	6	7	1	2	3	4	5	6
	Block 1 (Healthy Participation)															Block 1 (Healthy Participation)												Block 1 (Healthy Participation)												
	Half Term 1									Half Term 2						Half Term 3						Half term 4						Half Term 5							Half term 6					
Boys 1	Football			Basketball			Handball									Rugby			HRF			Badminton						Cricket			Athletics			Softball					
Girls 1	Netball			Football			HRF									Lacrosse			OAA			Tag Rugby						Rounders			Athletics			Badminton/Multi					
Boys 2	Basketball			Rugby			Football									HRF			Badminton			OAA						Athletics			Softball			I					
Girls 2	Football			OAA			Netball									Badminton			Lacrosse			HRF						Athletics			Rounders			Multi Sports					
KPI's	Warm up			Muscles			Fitness components									Aerobic/Anaerobic			Effects of exercise			Training zones						Cardiovascular			Respiratory			Skeleton					
	KPI's assessment matrix to underpin each lesson																																						
Wet Weather Lessons Boys 1	Indoor football			Basketball			Leadership									Fitness			Badminton/Leadership			Badminton/Leadership						Fitness			Leadership			Handball					
Wet Weather Lessons Girls 1	Benchball			Dance			Fitness									Dance			Benchball			Benchball						Dance			Fitness			Dance					
Wet Weather Lessons Boys 2	Indoor football			Basketball			Leadership									Fitness			Badminton/Leadership			Badminton/Leadership						Fitness			Leadership			Handball					
Wet Weather Lessons Girls 2	Dance			Fitness			Fitness									Badminton			Benchball			Fitness/Leadership						Badminton			Fitness			Fitness					

Curriculum Map Year 10: NCFE Level 1/2 Food and Cookery

Intent

Year 10 begins the two-year NCFE Level 1/2 Technical Award in Food and Cookery. The curriculum builds secure knowledge across the mandatory content areas while deliberately increasing practical independence, accuracy, food-science understanding and the ability to explain and justify decisions. Students move from KS3 foundations into vocational, synoptic thinking: applying health and safety, provenance, nutrition, food choice and practical technique to realistic food situations. Frequent practical work, retrieval and exam-style questioning establish the knowledge and skills needed for recipe development, menu planning and external assessment in Year 11.

Why I study Food and Cookery

Studying Food and Cookery helps me understand how safe food production, nutrition, provenance and consumer choice connect to the food industry. I develop practical cookery skills alongside analysis, problem solving, organisation and evaluation. The course prepares me to make informed decisions for different customers and dietary needs and gives me a strong foundation for Year 11 assessment, further study, apprenticeships and employment in food, catering and hospitality.

Cultural capital / enrichment

Students explore food from farm to fork, the role of the Food Standards Agency, food legislation, processing and manufacturing, sustainability, seasonality, dietary needs and the social influences that shape what people eat. Practical work exposes students to a broad range of ingredients, methods and presentation styles. Career links include chef, sous chef, kitchen assistant, catering assistant, food product development, nutrition and wider hospitality roles.

Curriculum Map Year 10 – Curriculum Content

Topic	Key knowledge	Key skills I will learn in this topic	Assessment opportunities (Summative and formative)	Key pieces / practical application
Qualification induction, baseline & practical expectations	• Structure and purpose of the NCFE Level 1/2 Technical Award • Seven mandatory content areas and synoptic links • Safe, hygienic and organised working routines • Importance of practical evidence, subject vocabulary and independent study	• Audit prior KS3 knowledge and practical confidence • Apply mise en place and safe working routines consistently • Use NCFE command words and specialist terminology accurately • Set individual practical and theory targets	• Baseline knowledge check and RAG audit • Practical skills observation • Retrieval starters and low-stakes quizzes • Personal target setting	• Course overview / learner tracker • Skills baseline practical • Individual practical-development targets

Topic	Key knowledge	Key skills I will learn in this topic	Assessment opportunities (Summative and formative)	Key pieces / practical application
Content Area 1 – Health and safety relating to food, nutrition and the cooking environment	• Personal and environmental hygiene • Physical, chemical and biological hazards; contamination and cross-contamination • HACCP, critical control points and risk reduction • Safe use of equipment and utensils • Temperature control, storage and high-risk foods	• Identify hazards, risks and suitable controls • Apply hygienic practice while preparing and cooking food • Use equipment safely and select appropriate controls • Explain HACCP using realistic food-production examples	• Hazard spotting and HACCP scenarios • Short-answer / extended exam questions • Practical observation of hygiene and safety • End-of-content-area quiz	• HACCP flow / risk assessment • High-risk food practicals • Safety reflection and improvement targets
Content Area 2 – Food legislation and food provenance	• Role of the Food Standards Agency and food-safety legislation • Provenance: food that is grown, reared or caught • Food transportation and food miles • Reasons for processing and manufacturing food • Advantages and disadvantages of processed / manufactured foods	• Trace ingredients from source to consumer • Compare processing and manufacturing methods • Analyse environmental, economic and consumer implications • Apply legislation and provenance knowledge to case studies	• Provenance research and case-study questions • Processing / manufacturing comparison tasks • Exam-style questions using command verbs • Retrieval and vocabulary checks	• Farm-to-fork commodity study • Food-label / provenance investigation • Product comparison activity
Content Area 3 – Food groups, balanced diet & key nutrients	• Food groups and proportions within a balanced diet • UK government healthy-eating guidance • Macronutrients, micronutrients, minerals, water and fibre • Sources, functions and consequences of imbalance • Nutritional requirements for different groups	• Classify foods and nutrients accurately • Explain functions and identify appropriate food sources • Apply nutritional knowledge to life stages and dietary needs • Analyse meals and justify improvements using evidence	• Nutrient retrieval and knowledge tests • Diet / life-stage case studies • Meal-analysis questions • Extended responses requiring explanation and justification	• Balanced-meal development • Nutrient-focused practicals • Recipe modification for a target group

Curriculum Map Year 10 – Curriculum Content (continued)

Topic	Key knowledge	Key skills I will learn in this topic	Assessment opportunities (Summative and formative)	Key pieces / practical application
Content Area 3 – Food-related health conditions, allergies, intolerances & labels	• Nutrient imbalances and diet-related health conditions • Food intolerances and food allergies • Nutritional information on food labels • Links between dietary choices, health and wellbeing	• Interpret nutritional labels and compare products • Recommend suitable dietary changes and justify them • Distinguish allergy from intolerance • Communicate advice using accurate nutritional terminology	• Food-label interpretation • Health-condition scenarios • Product comparison / healthier-choice task • Mixed exam questions	• Label-analysis investigation • Healthier recipe adaptation • Dietary-needs practical challenge
Content Area 4 – Factors affecting food choice	• Social factors influencing food choice • Environmental influences and sustainability • Seasonality and availability • Connections between food choice, culture, cost and lifestyle	• Analyse why consumers make different food choices • Compare social and environmental priorities • Select ingredients for seasonality and sustainability • Justify choices for a stated consumer or brief	• Scenario-based questions • Sustainability / seasonality research • Discussion and extended writing • Retrieval quizzes	• Seasonal menu task • Sustainable ingredient swap challenge • Consumer-profile response
Content Area 5 – Food preparation, cooking skills & techniques	• Key stages and purpose of recipes • Characteristics and functions of ingredients • Preparation skills, cooking techniques and cooking methods • Presentation skills and quality of finished dishes • How method and ingredient choice affect outcomes	• Develop accuracy, knife skills, heat control and time management • Select and combine appropriate preparation / cooking methods • Explain ingredient functions and food-science changes • Present dishes to an increasingly professional standard	• Teacher practical observation and skills tracker • Practical reflections using sensory vocabulary • Ingredient-function questions • Timed practical challenges	• Progressive practical portfolio • Sauces, doughs, protein dishes, vegetable dishes and baking • Plating / presentation development
Year 10 synoptic consolidation & readiness for Year 11	• Connections between safety, provenance, nutrition, food choice and practical technique • Importance of applying rather than recalling knowledge • Expectations for recipe development, menu planning and evaluation in Year 11	• Make synoptic links across content areas 1–5 • Analyse unfamiliar food scenarios • Evaluate strengths and next steps in practical performance • Build independence in planning and problem solving	• End-of-year mixed assessment • Practical skills checkpoint • Personal knowledge-gap audit • Exam-style command-word practice	• Synoptic practical challenge • Year 10 review / revision portfolio • Year 11 action plan

Curriculum Map Year 10: Triple Science (GCSE Chemistry, Biology and Physics)

Science Intent Statement - The Science department at Sale High School follows a 5 year in depth, knowledge rich Science curriculum which covers all aspects of the National Curriculum, supported by using the United Learning Year 7 – 9 structure. At Key Stage 4 we offer both Combined and Triple Science GCSEs through the AQA exam board.

Practicals play a key role in developing pupil's skills, practicals will be used to develop scientific enquiry skills collecting, recording and processing data. The Science curriculum is further enriched through Science club, Sale Scholars, Physics Olympiads and Science ambassadors.

We have a high level of pupils opting to take triple Science and great progression onto Science based A levels and University courses, we believe this is due to having high expectations, strong work ethic and most importantly our desire to develop pupils love for Science and thirst for knowledge.

Why study Science?

"I learn science because:

- **It develops my analytical and problem-solving skills.**
- **It increases my fundamental knowledge, linked to real life situations**
- **It helps me to develop my curiosity about the world around us."**

Cultural capital/enrichment - – In Year 10 pupils will have the opportunity to apply to become a science ambassador. We have a trip to visit Jodrell bank for those pupils who have a keen interest in Physics.

Please note that pupils will study all three sciences across the 2 years. At the end of the two years pupils will complete 6 exams (2 x Biology, 2 x Chemistry and 2 x Physics) This Curriculum map covers what they will learn for GCSE Biology, Chemistry and Physics in Year 10.

Half term	Topic	Key knowledge: *GCSE Biology, GCSE Chemistry and GCSE Physics – AQA Specification.*	Key skills I will learn in this topic	Assessment opportunities (Summative and formative) Key pieces
Autumn 1	B2 - Organisation B3 - Infection and Response (11) C2 - Bonding (12)	Pupils need to know: • **Cells** are the basic units of living organisms. • Similar cells form **tissues**. • Different tissues form **organs**. • Organs work together in **organ systems**. • Organ systems work together to form an **organism**. **4.2.2 Animal Tissues, Organs and Organ Systems** **Digestive System -**The digestive system breaks down food into soluble molecules for absorption. • Main organs: mouth, oesophagus, stomach, liver, pancreas, small intestine and large intestine. • Digested food is absorbed into the bloodstream. • **Enzymes -** Enzymes are **biological catalysts**.	**Practical Skills** **Food Tests Required Practical** Pupils will: • Test for **sugars** (Benedict's test). • Test for **starch** (iodine test). • Test for **proteins** (Biuret test). • Test for **lipids** (emulsion test). **2. Enzymes Required Practical** Pupils will: • Investigate the effect of **pH on amylase** activity. • Measure how quickly starch is broken down.	

		• Enzymes work through the **lock-and-key model**. • Enzyme activity is affected by **temperature** and **pH**. • **Amylase** breaks down starch into sugars. • **Protease** breaks down proteins into amino acids. • **Lipase** breaks down fats into fatty acids and glycerol. • Digestive enzymes are produced in the salivary glands, stomach, pancreas and small intestine. Pupils need to know: • Bile is made in the **liver** and stored in the **gall bladder**. • Bile neutralises stomach acid. • Bile emulsifies fats, increasing the surface area for lipase. **Blood and the Circulatory System - The Heart** • The heart is a pump that circulates blood. • Blood flows: ○ Body → right side of heart → lungs ○ Lungs → left side of heart → body • The coronary arteries supply the heart muscle with oxygen. **Blood Vessels - Arteries** carry blood away from the heart. • **Veins** carry blood towards the heart. • **Capillaries** allow exchange of substances between blood and tissues. **Blood Components** • **Red blood cells** transport oxygen. • **White blood cells** defend against pathogens. • **Platelets** help blood clot. • **Plasma** transports dissolved substances. **Coronary Heart Disease -** Caused by fatty deposits in coronary arteries. • Reduces blood flow to the heart muscle. ○ Treatments include: Stents, Statins, Bypass surgery, Heart transplants **Risk Factors for Non-Communicable Diseases:** Smoking, Obesity, Alcohol, Lack of exercise, Poor diet can increase disease risk. **Cancer -** Benign tumours stay in one place. • Malignant tumours spread and form secondary tumours. • Smoking is linked to lung cancer. • UV radiation can cause skin cancer. **4.2.3 Plant Tissues, Organs and Systems** • **Epidermal tissue** covers plant surfaces. • **Palisade mesophyll** carries out photosynthesis. • **Spongy mesophyll** aids gas exchange.	• Use iodine solution to identify when starch has disappeared. **3. Plant Transport Required Practical** Pupils will: • Investigate factors affecting the rate of **transpiration**. • Measure water uptake using a **potometer**. **Literacy Skills** Pupils will learn to: • Answer GCSE extended-writing questions. • Evaluate medical treatments by considering risks and benefits. **Maths Skills** Pupils will learn to: Calculate surface area to volume ratios. Calculate rates of reaction (enzyme investigations). Calculate mean values from data. Plot and interpret graphs. Draw conclusions from experimental data. Recognise correlations between variables. Use percentages and ratios. Interpret data from clinical and health studies. C2 **Practical Skills** Pupils will learn to: • Use models to represent ionic, covalent and metallic bonding. • Draw dot-and-cross diagrams for ionic and covalent substances. • Compare the properties of substances with different types of bonding. • Investigate electrical conductivity of ionic compounds and metals. • Relate the structure of a substance to its properties. **Literacy Skills** Pupils will learn to: • Answer GCSE extended-writing questions.	

		• **Xylem** transports water and mineral ions.
		• **Phloem** transports dissolved sugars.
		Plant Organs - Pupils need to know the functions of: Roots, Stems, Leaves
		Transpiration
		• Water moves through plants in the transpiration stream.
		• Water evaporates from leaf surfaces.
		  ○ Factors affecting transpiration: Light intensity, Temperature
		  ○ Air movement (wind), Humidity
		Translocation
		• Sugars dissolved in water are transported in the phloem.
		• Transport occurs from sources (leaves) to growing or storage tissues.
		Communicable Diseases: Pathogens are microorganisms that cause disease.
		  ○ Types of pathogen: **Bacteria, Viruses, Fungi, Protists**
		• Diseases spread by: Direct contact, Air, Water,
		• Bacteria produce **toxins**.
		• Viruses reproduce inside cells and damage them.
		2. Viral Diseases
		Measles
		• Causes fever and red skin rash.
		• Spread by coughs and sneezes.
		• Can lead to serious complications.
		• Prevented by vaccination.
		HIV/AIDS
		• Initially causes flu-like symptoms.
		• Attacks immune cells.
		• Can lead to AIDS.
		• Spread by sexual contact and infected blood.
		• Controlled using antiretroviral drugs.
		Tobacco Mosaic Virus (TMV)
		• Plant disease.
		• Causes mosaic leaf discolouration.
		• Reduces photosynthesis and growth.
		3. Bacterial Diseases
		Salmonella
		• Causes food poisoning.
		• Spread through contaminated food.
		• Symptoms include fever, stomach cramps, vomiting and diarrhoea.
		• Poultry are vaccinated to reduce spread.
			• Use key vocabulary accurately, including:
			  ○ Ionic bond
			  ○ Covalent bond
			  ○ Metallic bond
			  ○ Ion
			  ○ Lattice
			  ○ Delocalised electron
			  ○ Polymer
			  ○ Nanoparticle
			• Explain how bonding affects the properties of materials.
			• Compare different bonding types using scientific evidence.
			Maths Skills
			Pupils will learn to:
			• Calculate numbers of protons, neutrons and electrons in atoms and ions.
			• Determine ionic charges from Group numbers.
			• Work out formulae of ionic compounds from ion charges.
			• Interpret chemical formulae and ratios of atoms.
			• Use powers of ten and standard form when comparing particle sizes.
			• Convert between metres and nanometres (nm).
			• Calculate and compare surface area to volume ratios (Higher Tier).
			• Interpret data tables and graphs showing melting points, boiling points and conductivity.
			• Compare sizes of atoms, nanoparticles and larger particles.
			Key Mathematical Knowledge
			• **1 nanometre (nm) = 1×10^{-9} m**
			• Use ratios to determine ionic formulae (e.g. MgO, $CaCl_2$, Al_2O_3).	

		Gonorrhoea • Sexually transmitted infection (STI). • Symptoms include pain when urinating and thick discharge. • Treated with antibiotics. • Some strains are antibiotic resistant. **4. Fungal Diseases** **Rose Black Spot** • Causes purple or black spots on leaves. • Reduces photosynthesis and growth. • Spread by water and wind. • Controlled using fungicides or removing infected leaves. **5. Protist Diseases** **Malaria** • Caused by a protist. • Spread by mosquitoes. • Can be prevented using mosquito nets and insect control. **6. Human Defence Systems** **Physical and Chemical Defences** • Skin forms a barrier. • Nose hairs and mucus trap pathogens. • Cilia move mucus out of airways. • Stomach acid kills pathogens. **The Immune System** • **White blood cells** protect against disease by: ○ Phagocytosis (engulfing pathogens) ○ Producing antibodies ○ Producing antitoxins • Antibodies are specific to particular antigens. **7. Vaccination -** Vaccines contain dead or inactive pathogens. • They stimulate antibody production. • Memory cells provide a faster response in future infections. • Vaccination reduces the spread of disease **8. Antibiotics and Painkillers** **Antibiotics -** Kill bacteria but not viruses. • Example: **Penicillin**. • Overuse can lead to antibiotic resistance (e.g. MRSA). • **Painkillers -** Relieve symptoms. • Do not kill pathogens.	• Understand that nanoparticles have a very large surface area compared with their volume. • Use standard form for atomic and nanoparticle sizes.	

		9. Discovery and Development of Drugs ○ New drugs are tested for: **Toxicity, Efficacy, Correct dosage** ○ Drug testing stages: Laboratory testing, Animal testing, Clinical trials • Double-blind trials and placebos improve reliability. **10. Monoclonal Antibodies (Biology Only / Higher Content)** • Produced from a single clone of cells. • Bind to one specific antigen. ○ Uses: Pregnancy tests, Detecting pathogens, Cancer treatment ○ Medical diagnosis **11. Plant Disease (Biology Only)** ○ Plants can be infected by: Viruses, Bacteria, Fungi, Insects ○ Signs of disease: Stunted growth, Spots on leaves, Areas of decay, Discolouration, Presence of pests C2 - Bonding **Atoms, Elements and Compounds** • Atoms combine to form compounds through chemical bonds. • Bonding involves the outer-shell electrons. • Elements are made of one type of atom. • Compounds contain two or more different elements chemically bonded together. **Ionic Bonding** • Ionic bonding occurs between **metals and non-metals**. • Metals lose electrons to form **positive ions**. • Non-metals gain electrons to form **negative ions**. • Oppositely charged ions attract strongly. • Ionic compounds form giant ionic lattices. **Properties of Ionic Compounds** • High melting and boiling points. • Conduct electricity when molten or dissolved in water. • Usually soluble in water. **Examples** Sodium chloride (NaCl), Magnesium oxide (MgO) **Covalent Bonding** • Covalent bonding occurs between **non-metal atoms**. • Atoms share pairs of electrons. • A shared pair of electrons forms one covalent bond. **Simple Covalent Molecules** Examples: Hydrogen (H_2), Oxygen (O_2), Water (H_2O), Methane (CH_4), Carbon dioxide (CO_2) **Properties**		

		• Low melting and boiling points, Do not conduct electricity, Weak intermolecular forces between molecules. **Polymers** • Polymers are long chains of repeating atoms. • Strong covalent bonds within the chains. • Forces between chains affect melting and boiling points. **Giant Covalent Structures** **Diamond** • Each carbon atom bonds to four others. • Very hard. • High melting point. • Does not conduct electricity. **Graphite** • Each carbon atom bonds to three others. • Layers can slide over each other. • Conducts electricity due to delocalised electrons. • Soft and slippery. **Graphene** • Single layer of graphite. • Strong, lightweight and conducts electricity. **Silicon Dioxide** • Giant covalent structure. • High melting point. • Hard and strong. **Metallic Bonding** • Occurs in metals. • Positive metal ions in a sea of delocalised electrons. • Strong attraction between ions and electrons. **Properties of Metals** • Good conductors of electricity and heat. • High melting and boiling points. • Strong and malleable. • Can be bent and shaped. **Nanoparticles** • Particles between 1-100 nm in size. • Large surface area to volume ratio. • Used in catalysts, medicines, cosmetics and electronics. • Benefits and risks are still being researched.		

Autumn 2	P2 – Electricity (19) C3 - Quantitative Chemistry (16)	**Current, Charge and Potential Difference** • Electric current is the flow of charge. • Charge, current and time are related by: ○ **Q = I × t** • Current is measured in **amperes (A)**. • Charge is measured in **coulombs (C)**. • Potential difference (voltage) is measured in **volts (V)**. • Cells and batteries provide the potential difference needed for current to flow. **Resistance** Pupils will learn: • Resistance opposes the flow of current. • Higher resistance means a smaller current for a given voltage. • Current, voltage and resistance are related by: ○ **V = I × R** • Resistance is measured in **ohms (Ω)**. **Circuits** • How to draw and interpret standard circuit symbols. • The differences between **series and parallel circuits**. • In series circuits: ○ Current is the same throughout. ○ Voltage is shared. • In parallel circuits: ○ Voltage is the same across each branch. ○ Current is shared between branches. **Electrical Components** • How current and resistance behave in: ○ Resistors ○ Filament lamps ○ Diodes ○ Thermistors ○ Light-dependent resistors (LDRs) • How these components are used in circuits. **Electrical Power and Energy** • Energy is transferred when current flows. • Power is the rate of energy transfer. • Equations: ○ **Power = Current × Voltage**	**P2 Electricity (AQA)** **Practical Skills** Draw and interpret circuit diagrams. Build series and parallel circuits. Measure current, potential difference and resistance. Investigate factors affecting the resistance of a wire. Investigate current and potential difference in different circuit arrangements. **Maths Skills** **Pupils will learn to:** Use and rearrange equations: Q = It V = IR Calculate charge, current, potential difference and resistance. Use standard units (C, A, V, Ω). Interpret and plot graphs. Calculate gradients from graphs. Calculate energy transferred and power. Use ratios, decimals and standard form. Substitute values into equations and change the subject**.** **Chemistry C3: Quantitative Chemistry** **Practical Skills** Pupils will learn to: • Measure mass changes in reactions. • Investigate conservation of mass. • Use balanced equations. • Calculate concentrations. **Literacy Skills** Pupils will learn to: • Answer extended-response questions. • Use key terms accurately: ○ Mole ○ Mr ○ Concentration ○ Limiting reactant • Explain calculations and conclusions. **Maths Skills**	

		○ **Energy = Power × Time** • How to calculate the energy used by electrical appliances. **Domestic Electricity** • UK mains electricity is approximately **230 V AC**. ○ The functions of: Live wire, Neutral wire, Earth wire, Fuse ○ Circuit breaker • How electrical safety devices protect users. **Static Electricity** • Objects can become charged by friction. • Like charges repel; opposite charges attract. • Static electricity can create sparks and electric fields. C3 **Conservation of Mass** • Mass is never created or destroyed in a chemical reaction. • Total mass of reactants = total mass of products. • Chemical equations must be balanced. **Relative Formula Mass (Mr)** • Mr = total relative atomic masses of all atoms in a compound. • Used in quantitative calculations. **The Mole** • Amount of substance is measured in **moles (mol)**. • 1 mole contains **6.02×10^{23} particles** (Avogadro constant). • 1 mole of a substance has a mass equal to its **Mr** in grams. **Chemical Equations and Moles** • Balanced equations show the ratio of substances reacting. • Mole ratios are used to calculate reactants and products. **Mass Calculations** • Calculate masses using balanced equations and mole ratios. • Convert between mass and moles using Mr. **Limiting Reactants (Higher Tier)** • The limiting reactant is used up first. • It determines the maximum amount of product formed. • Excess reactants remain after the reaction. **Concentration** • Concentration measures the amount of solute in a solution. • Measured in **g/dm^3**. • Higher concentration means more solute in a given volume.	Pupils will learn to: • Calculate **Mr**. • Calculate moles, mass and concentration. • Use mole ratios from equations. • Balance equations using data. • Rearrange equations. • Use ratios and standard form. • **HT:** Calculate limiting reactants. **Key Equations** • **Moles = Mass ÷ Mr** • **Mass = Moles × Mr** • **Concentration = Mass ÷ Volume**	

Spring 1	B4- Bioenergetics (11)
	C4 - Chemical Changes
		Photosynthesis
		Pupils will learn:
		• Photosynthesis is an **endothermic reaction** that uses light energy.
		  ○ Word equation: **Carbon dioxide + water → glucose + oxygen**
		  ○ Symbol equation: **$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$**
		• Photosynthesis takes place in **chloroplasts** containing **chlorophyll**.
		  ○ Glucose produced can be: Used in respiration, Stored as starch
		  ○ Made into fats and oils, Used to make cellulose
		  ○ Used to make amino acids and proteins
		Factors Affecting Photosynthesis
		Pupils will learn:
		  ○ The rate of photosynthesis is affected by: **Light intensity, Carbon dioxide concentration, Temperature**
		  ○ **Chlorophyll concentration**
		• A **limiting factor** is the factor in shortest supply that slows the rate of photosynthesis.
		Aerobic Respiration
		• Respiration releases energy for life processes.
		• Aerobic respiration requires oxygen.
		• Word equation:
		  ○ **Glucose + oxygen → carbon dioxide + water**
		• Aerobic respiration is **exothermic** and releases a large amount of energy.
		Anaerobic Respiration
		In Animals
		• Occurs when insufficient oxygen is available.
		  ○ Equation: **Glucose → lactic acid**
		• Releases less energy than aerobic respiration.
		In Plants and Yeast
		  ○ Equation: **Glucose → ethanol + carbon dioxide**
		• Called **fermentation,** Used in bread and alcohol production.
		Exercise and Oxygen Debt
		  ○ Exercise increases: Heart rate, Breathing rate, Breathing depth
		• More oxygen is supplied to muscles.
		• Anaerobic respiration causes lactic acid to build up.
		• This creates an **oxygen debt**.
		• Lactic acid is transported to the liver and converted back to glucose. [
		Metabolism
		• Metabolism is the sum of all chemical reactions in the body.
			B4 Bioenergetics
			Practical Skills
			Pupils will learn to:
			• Investigate the effect of **light intensity on photosynthesis** using pondweed.
			• Measure and calculate the **rate of photosynthesis**.
			• Identify and explain **limiting factors** affecting photosynthesis.
			Maths Skills
			Pupils will learn to:
			• Calculate rates of photosynthesis.
			• Plot, draw and interpret graphs.
			• Identify limiting factors from data and graphs.
			• Convert between graphical and numerical data.
			• Calculate means.
			• Use ratios, fractions and percentages.
			• Solve simple equations.
			• (HT) Apply the inverse square law for light intensity.
			• (HT) Analyse cost-effectiveness data for greenhouse conditions
			
			C4 Chemical Changes
			Practical Skills
			Pupils will learn to:
			• Investigate the reactivity of metals.
			• Make soluble salts from acids.
			• Measure pH using indicators and probes.
			• Carry out electrolysis.
			
			Literacy Skills
			Pupils will learn to:
			• Answer extended-response questions.
			• Use key terms accurately:
			  ○ Oxidation	

		○ Metabolic processes include: Respiration, Building proteins from amino acids ○ Making fats from glycerol and fatty acids ○ Converting glucose into starch, glycogen and cellulose ○ Breaking down excess proteins to form urea **C4: Chemical Changes** **Reactivity Series -** Metals have different reactivities. • More reactive metals form positive ions more easily. • More reactive metals displace less reactive metals. **Order:** Potassium → Sodium → Lithium → Calcium → Magnesium → Zinc → Iron → Copper **Oxidation and Reduction** • **Oxidation** = gain of oxygen or loss of electrons. • **Reduction** = loss of oxygen or gain of electrons. • Reactions involving both are called **redox reactions**. **Metal Extraction** • Unreactive metals can be found as native elements. • Metals below carbon are extracted by reduction with carbon. • Metals above carbon are extracted by electrolysis. **Acids and Metals** • Acid + Metal → Salt + Hydrogen • More reactive metals react more vigorously with acids. **Neutralisation** • Acid + Alkali → Salt + Water • Acid + Base → Salt + Water • Acid + Carbonate → Salt + Water + Carbon Dioxide **Salts** • Hydrochloric acid produces **chlorides**. • Nitric acid produces **nitrates**. • Sulfuric acid produces **sulfates**. **pH Scale** • pH 7 = Neutral, pH below 7 = Acidic, pH above 7 = Alkaline **Acids and Alkalis** Acids contain **H^+ ions**., Alkalis contain **OH^- ions**.Neutralisation: **$H^+ + OH^- \rightarrow H_2O$** **Strong and Weak Acids** Strong acids fully ionise. Weak acids partially ionise. Stronger acids have lower pH. **Electrolysis**	○ Reduction ○ Reactivity ○ Electrolysis ○ Cathode ○ Anode ○ Neutralisation • Explain observations and conclusions. **Maths Skills** Pupils will learn to: • Use the pH scale. • Interpret electrolysis data. • Calculate concentration. **HT:** • Write and balance ionic and half equations. • Calculate energy and resource use in metal extraction. **Key Equations** • **$H^+ + OH^- \rightarrow H_2O$** • **Concentration = Mass ÷ Volume**	

		• Electrolysis decomposes ionic compounds using electricity. • Positive ions move to the **cathode (-)**. • Negative ions move to the **anode (+)**. • Reduction occurs at the cathode. • Oxidation occurs at the anode. **Electrolysis of Molten Compounds** • Metal produced at the cathode. • Non-metal produced at the anode. **Electrolysis of Aqueous Solutions** • Hydrogen may form at the cathode. • Oxygen or a halogen may form at the anode. **Aluminium Extraction** • Aluminium is extracted by electrolysis. • Cryolite lowers energy costs. • Carbon anodes need replacing because they react with oxygen.		

Spring 2	P4 - Atomic Structure (12)
	C5 - Energy Changes (9)
		P4: Atomic Structure
		Atomic Structure
		• Atoms contain protons, neutrons and electrons.
		• The nucleus contains most of the atom's mass.
		• Electrons are arranged in energy levels.
		• Atoms are mostly empty space.
		Atomic Number and Mass Number
		• Atomic number = number of protons.
		• Mass number = protons + neutrons.
		• In a neutral atom:
		  ○ Protons = Electrons.
		Isotopes - Isotopes are atoms of the same element with different numbers of neutrons.
		• They have the same atomic number but different mass numbers.
		Development of the Atomic Model
		• Dalton: solid sphere model.
		• Thomson: plum pudding model.
		• Rutherford: nuclear model from alpha scattering.
		• Bohr: electrons in fixed energy levels.
		• Chadwick: discovered neutrons.
		Radioactivity
		• Some nuclei are unstable and decay.
		• Radioactive decay is random.
			P4 Atomic Structure
			Practical Skills
			Pupils will learn to:
			• Determine half-life from data and graphs.
			
			Literacy Skills
			Pupils will learn to:
			• Answer extended-response questions.
			• Use key terms accurately:
			  ○ Atom
			  ○ Isotope
			  ○ Nucleus
			  ○ Alpha
			  ○ Beta
			  ○ Gamma
			  ○ Half-life
			  ○ Contamination
			  ○ Irradiation
			• Explain scientific evidence and model development.
			Maths Skills
			Pupils will learn to:
			• Use standard form.	

		• Activity is the rate of decay.
		• Activity is measured in becquerels (Bq).
		Types of Radiation: Alpha (α) 2 protons + 2 neutrons. Most ionising. Least penetrating. Stopped by paper.
		Beta (β) Fast-moving electron. Medium ionising. Medium penetration. Stopped by thin aluminium.
		Gamma (γ). Electromagnetic radiation. Least ionising. Most penetrating. Reduced by thick lead or concrete.
		Nuclear Equations
		• Alpha decay:
		  ○ Mass number decreases by 4.
		  ○ Atomic number decreases by 2.
		• Beta decay:
		  ○ Atomic number increases by 1.
		• Gamma decay:
		  ○ No change in mass or atomic number.
		Contamination and Irradiation
		• Contamination: radioactive material on or inside an object.
		• Irradiation: exposure to radiation.
		• Irradiated objects do not become radioactive.
		Half-Life - Half-life is the time taken for:
		  ○ Activity to halve, or
		  ○ Number of unstable nuclei to halve.
		• Decay is random but follows a predictable half-life.
		
		C5: Energy Changes
		Energy Changes in Reactions
		• Chemical reactions transfer energy to or from the surroundings.
		• Energy is needed to break bonds.
		• Energy is released when new bonds form.
		Exothermic Reactions
		• Transfer energy to the surroundings.
		• Temperature of surroundings increases.
		• Products have less energy than reactants.
		Examples: Combustion, Neutralisation, Respiration
		Endothermic Reactions
		• Take in energy from the surroundings.
		• Temperature of surroundings decreases.
		• Products have more energy than reactants.
			• Interpret isotope notation.
			• Calculate atomic and mass numbers.
			• Calculate activity and count rate.
			• Determine half-life from graphs and data.
			• **HT:** Calculate decay after multiple half-lives using ratios.
			
			Practical Skills
			Pupils will learn to:
			• Investigate reactions of metals with water and acids.
			• Explore displacement reactions.
			• Prepare a pure, dry soluble salt from an insoluble oxide or carbonate.
			• Carry out neutralisation and pH investigations.
			• Investigate electrolysis of aqueous solutions using inert electrodes.
			Maths Skills
			Pupils will learn to:
			• Use pH values to compare acidity and alkalinity.
			• Calculate concentration, mass and volume relationships.
			• Use ratios, fractions and percentages.
			• Calculate means from data.
			• Rearrange equations and substitute values.
			• Interpret tables, graphs and numerical data.
			• Plot and analyse experimental results.
			• Use significant figures appropriately.	

		Examples: Thermal decomposition, Photosynthesis, Some sports injury packs Reaction Profiles • Show energy changes during a reaction. • Exothermic reactions have an overall energy decrease. • Endothermic reactions have an overall energy increase. Activation Energy • Minimum energy needed for a reaction to start. • Needed to break bonds in reactants. Cells and Batteries • Chemical reactions can produce electricity. • A cell contains two different electrodes and an electrolyte. • Cells connected together form a battery. Rechargeable Cells • Reactions can be reversed by supplying electrical energy. • Used in phones, laptops and electric vehicles. Hydrogen Fuel Cells • Hydrogen reacts with oxygen to produce water. • Generate electricity. • Produce no carbon dioxide at point of use.		
Summer 1	B5 – Homeostasis C6 – Rates (13)	**B5: Homeostasis and Response** **Homeostasis -** Homeostasis maintains stable internal conditions. Controls: Body temperature, Blood glucose concentration, Water levels **The Nervous System** • Detects and responds to changes in the environment. • Pathway: Receptor → Sensory neurone → CNS → Motor neurone → Effector • Effectors are muscles or glands. **Reflex Actions:** Rapid, automatic responses. Protect the body from harm. Use a reflex arc. **The Brain -** Controls complex behaviour. • Main areas: ○ Cerebral cortex (thinking, memory) ○ Cerebellum (balance, movement) ○ Medulla (heart rate, breathing) **The Eye -** Cornea and lens focus light onto the retina. • Retina contains: ○ Rod cells (dim light)	**B5 Homeostasis and Response** **Practical Skills** Pupils will learn to: • Measure and investigate **human reaction times**. • Investigate factors affecting reaction time (e.g. caffeine). • Record, process and evaluate experimental data. • (Biology only) Investigate the effect of light on plant growth. **Maths Skills** Pupils will learn to: • Calculate **mean reaction times**. • Present and interpret data in tables and graphs. • Identify patterns, trends and anomalies. • Use percentages, ratios and averages. • Compare and evaluate results.	

		○ Cone cells (colour vision) **Vision Defects** • Short-sightedness: corrected with concave lenses. • Long-sightedness: corrected with convex lenses. **Hormones** • Chemical messengers carried in the blood. • Produced by endocrine glands. **Key Hormones:** Adrenaline, Insulin, Thyroxine, Oestrogen, Testosterone **Control of Blood Glucose** • Insulin lowers blood glucose. • Glucagon raises blood glucose. • Controlled by the pancreas. **Diabetes** • Type 1: little/no insulin produced. • Type 2: cells become less responsive to insulin. **Maintaining Body Temperature** • Body temperature kept close to **37°C**. **Too Hot:** Sweating, Vasodilation **Too Cold:** Shivering, Vasoconstriction **Human Reproduction** **Menstrual Cycle:** Controlled by hormones: FSH, LH, Oestrogen, Progesterone **Fertility Treatments -** IVF can help treat infertility. **Contraception:** Hormonal methods, Barrier methods, Surgical methods **Plant Hormones: Auxins** • Control plant growth, Cause phototropism (response to light), Cause gravitropism (response to gravity). **Gibberellins:** Stimulate germination and growth. **Ethene:** Controls fruit ripening. **6: The Rate and Extent of Chemical Change** **Rate of Reaction** • Rate of reaction measures how quickly reactants form products. • Faster reactions produce products more quickly. **Factors Affecting Rate: Temperature** • Higher temperature increases reaction rate. • Particles move faster and collide more often. **Concentration** • Higher concentration increases reaction rate. • More particles are available to collide.	• Translate data between graphical and numerical forms **C6 Rates and Equilibrium** **Practical Skills** Pupils will learn to: • Investigate how **concentration affects reaction rate**. • Measure reaction rates using: ○ Gas volume produced ○ Colour/turbidity changes • Investigate the effect of **catalysts** on reaction rate. • Record, analyse and evaluate experimental results. **Maths Skills** Pupils will learn to: • Calculate **mean rates of reaction**. • Calculate and interpret **gradients** and **tangents** on graphs. • Plot and interpret rate of reaction graphs. • Calculate means and identify anomalies. • Use ratios, fractions, percentages and standard form. • Rearrange equations and substitute values. • Convert between graphical and numerical data. • (HT) Calculate rates using **mol/s**	

		Pressure (Gases) • Higher pressure increases reaction rate. • Gas particles are closer together. **Surface Area** • Smaller particles have a larger surface area. • More frequent collisions occur. **Catalysts** • Catalysts increase reaction rate. • They are not used up in the reaction. • They lower the activation energy. **Collision Theory -** Reactions occur when particles collide. • Collisions must have enough energy to react. • Increasing temperature increases successful collisions. **Reversible Reactions:** Products can react to reform reactants. • Represented by a reversible arrow (⇌). **Examples:** Hydrated and anhydrous salts. Ammonium chloride formation. **Dynamic Equilibrium (HT)** • Occurs in a closed system. • Forward and reverse reactions happen at the same rate. • Concentrations remain constant. **Le Chatelier's Principle (HT)** If conditions change, the equilibrium shifts to oppose the change. **Changing Concentration** • Increases favour the side using up the added substance. **Changing Pressure** • Higher pressure favours the side with fewer gas molecules. **Changing Temperature** • Increase favours the endothermic reaction. • Decrease favours the exothermic reaction.		

Summer 2	P5 – Forces
	C7 - Organic Chemistry (11)
		P5: Forces
		Scalars and Vectors
		• Scalars have magnitude only.
		• Vectors have magnitude and direction.
		• Examples:
		  ○ Scalar: distance, speed
		  ○ Vector: displacement, velocity, force
		Forces - A force is a push or pull.
		• Forces can be:
			P5 Forces
			Practical Skills
			Pupils will learn to:
			• Investigate how force affects acceleration.
			• Investigate how mass affects acceleration.
			• Measure speed, acceleration and reaction time.	

		○ **Contact:** friction, air resistance, tension, normal contact force. ○ **Non-contact:** gravity, magnetic, electrostatic. **Gravity and Weight** • Weight is the force caused by gravity. • Mass stays the same; weight can change. • Weight depends on gravitational field strength. **Weight = Mass × Gravitational Field Strength** **Resultant Forces** • Resultant force is the overall force acting on an object. • Balanced forces → resultant force = 0. • Unbalanced forces → object accelerates. **Work Done** • Work is done when a force moves an object. • Energy is transferred when work is done. **Work Done = Force × Distance** **Elasticity** • Elastic deformation: returns to original shape. • Inelastic deformation: does not return to original shape. • Extension is proportional to force up to the limit of proportionality. **Force = Spring Constant × Extension** • Stretching a spring stores elastic potential energy. **Distance and Displacement** • Distance = total path travelled. • Displacement = straight-line distance and direction from start to finish. **Speed and Velocity** • Speed = distance travelled per second. • Velocity = speed in a given direction. Typical speeds: Walking ≈ 1.5 m/s Running ≈ 3 m/s Cycling ≈ 6 m/s **Acceleration -** Acceleration is the rate of change of velocity. • Deceleration is negative acceleration. **Acceleration = Change in Velocity ÷ Time** • Free-fall acceleration ≈ 9.8 m/s². **Newton's Laws** **First Law -** An object remains at rest or moving at constant velocity unless acted on by a resultant force. **Second Law -** Force = mass × acceleration. **Third Law -** Forces between two objects are equal and opposite. **Stopping Distance**	• Analyse force and motion data. **Literacy Skills** Pupils will learn to: • Answer extended-response questions. • Use key terms accurately: ○ Scalar ○ Vector ○ Resultant force ○ Velocity ○ Acceleration ○ Momentum ○ Inertia • Explain results and conclusions using scientific reasoning. **Maths Skills** Pupils will learn to: • Calculate speed, acceleration and weight. • Calculate resultant forces. • Draw and interpret distance-time and velocity-time graphs. • Calculate gradients and areas from graphs. • Use proportional relationships. • Calculate momentum. • Apply required equations. **Key Equations** • **Speed = Distance ÷ Time** • **Weight = Mass × Gravitational Field Strength** • **Acceleration = Change in Velocity ÷ Time** • **Force = Mass × Acceleration (F = ma)** • **Momentum = Mass × Velocity** • **Work Done = Force × Distance** • **Force = Spring Constant × Extension** • **Elastic Potential Energy = ½ke²**	

		Stopping Distance = Thinking Distance + Braking Distance **Thinking Distance Increases With:** Tiredness, Alcohol, Drugs, Distractions **Braking Distance Increases With:** Higher speed, Wet or icy roads, Worn tyres, Faulty brakes **Terminal Velocity** • Falling objects accelerate due to gravity. • As speed increases, air resistance increases. • Terminal velocity is reached when forces become balanced. **Momentum** • Momentum depends on mass and velocity. **Momentum = Mass × Velocity** • Momentum is conserved in a closed system. **C7: Organic Chemistry** **Crude Oil -** Crude oil is a **finite resource**. • It is made from the remains of ancient biomass. • Crude oil is a mixture of hydrocarbons. **Hydrocarbons -** Hydrocarbons contain **hydrogen and carbon only**. • Most hydrocarbons in crude oil are **alkanes**. **Alkanes:** Saturated hydrocarbons., Contain only single bonds, General formula: $\mathbf{C_nH_{2n+2}}$ Examples: Methane (CH_4), Ethane (C_2H_6), Propane (C_3H_8), Butane (C_4H_{10}) **Fractional Distillation -** Separates crude oil into fractions. • Fractions contain hydrocarbons with similar boiling points. • Large hydrocarbons have higher boiling points. **Uses of Fractions,** Refinery gases → fuel, Petrol → cars, Kerosene → aircraft fuel • Diesel → vehicles, Bitumen → roads, • **Properties of Hydrocarbons** As chain length increases: Boiling point increases, Viscosity increases, Flammability decreases. **Cracking -** Breaks long-chain hydrocarbons into shorter molecules. • Produces: Alkanes, Alkenes, Increases fuel supply. Produces feedstock for polymers. **Alkenes** • Unsaturated hydrocarbons. • Contain at least one double bond. • General formula: $\mathbf{C_nH_{2n}}$ Examples: Ethene (C_2H_4), Propene (C_3H_6) **Test for Alkenes -** Decolourise orange bromine water. **Polymers,** Made from many small molecules called monomers.	**C7 Organic Chemistry** **Practical Skills** Pupils will learn to: • Interpret and draw displayed and structural formulae. • Model hydrocarbons, alkanes, alkenes and polymers. • Investigate combustion and cracking of hydrocarbons. • Analyse and evaluate experimental data related to fuels and organic compounds. **Maths Skills** Pupils will learn to: • Use ratios, fractions and percentages. • Interpret tables, graphs and numerical data. • Calculate means from data. • Use significant figures appropriately. • Rearrange equations and substitute values. • Identify trends and patterns in data	

		• Formed by addition polymerisation. • Alkenes are used to make polymers. Examples: Poly(ethene), Poly(propene) **Useful Products from Alkene Reactions** **Ethanol** • Produced from ethene and steam. • Used in alcoholic drinks and as a fuel. **Carboxylic Acids** ○ Weak acids. Examples: Ethanoic acid, Citric acid **Condensation Polymers (HT)** • Form when monomers join together and release a small molecule, usually water. ○ Include: Polyesters, Polyamides **Natural Polymers –** DNA, Proteins, Starch, Cellulose		

Curriculum Map Year 10: Combined Science (AQA)

Science Intent Statement - The Science department at Sale High School follows a 5 year in depth, knowledge rich Science curriculum which covers all aspects of the National Curriculum, supported by using the United Learning Year 7 – 9 structure. At Key Stage 4 we offer both Combined and Triple Science GCSEs through the AQA exam board.

Practicals play a key role in developing pupil's skills, practicals will be used to develop scientific enquiry skills collecting, recording and processing data. The Science curriculum is further enriched through Science club, Sale Scholars, Physics Olympiads and Science ambassadors.

We have a high level of pupils opting to take triple Science and great progression onto Science based A levels and University courses, we believe this is due to having high expectations, strong work ethic and most importantly our desire to develop pupils love for Science and thirst for knowledge.

Why study Science?

''I learn science because:

- **It develops my analytical and problem-solving skills.**
- **It increases my fundamental knowledge, linked to real life situations**
- **It helps me to develop my curiosity about the world around us.''**

Cultural capital/enrichment – In Year 10 pupils will have the opportunity to apply to become a science ambassador. We have a trip to visit Jodrell bank for those pupils who have a keen interest in Physics.

Half term	**Topic**	**Key knowledge:** ***GCSE Combined Science – AQAl Specification.***	**Key skills I will learn in this topic:**	**Assessment opportunities (Summative and formative) Key pieces**
Autumn 1	C2 - Bonding	Pupils will learn: **Bonding** Pupils will learn: • Atoms bond through **ionic, covalent, and metallic bonding**. • **Ionic bonding** involves the transfer of electrons, forming positive and negative ions. • **Covalent bonding** involves atoms sharing pairs of electrons. • **Metallic bonding** involves positive metal ions and delocalised electrons. • How to draw and interpret **dot-and-cross diagrams** and simple bonding models. **Structure and Properties** Pupils will learn: • The differences between **simple molecular**, **giant ionic**, **giant covalent**, and **metallic** structures. • How bonding and structure affect **melting and boiling points**. • Why ionic compounds conduct electricity when **molten or dissolved**, but not when solid. • Why metals are good conductors of **heat and electricity** and are **malleable**. • The structures, properties, and uses of **diamond, graphite, graphene, and fullerenes**. **States of Matter**	**Practical Skills** Pupils will learn to: • Calculate reaction rates. • Explain how enzymes work using the active site model and other models. • Observe and draw a transverse section of a leaf. • Measure transpiration using water uptake. • Investigate the distribution of stomata and guard cells. • Collect, process and analyse data from transpiration investigations. **Literacy Skills** Pupils will learn to:	End of topic Assessment

	B2 - Organisation	Pupils will learn: • How the arrangement and movement of particles explain the properties of **solids, liquids, and gases**. • How energy is involved in **melting, boiling, condensing, and freezing**. • How particle motion and energy explain differences in **density** between solids, liquids, and gases. Pupils will learn: **Organisation -** Cells form tissues, tissues form organs, and organs form organ systems. • Organ systems work together to make an organism. **Digestion** • The digestive system breaks down food and absorbs nutrients. • Enzymes speed up digestion and work best at certain temperatures and pH values. • Amylase breaks down starch, proteases break down proteins, and lipases break down fats. • Digested food is absorbed and used for growth, repair and respiration. • Bile neutralises stomach acid and helps fats digest faster. **Circulatory System** • The heart pumps blood in a double circulatory system. • The right side pumps blood to the lungs; the left side pumps blood around the body. • Arteries, veins and capillaries are adapted for different jobs. • Blood contains plasma, red blood cells, white blood cells and platelets. • Pacemakers can help control irregular heartbeats. **Cardiovascular Disease** • Coronary heart disease is caused by fatty deposits in coronary arteries. • Treatments include stents, statins, valve replacement and heart transplants. • Each treatment has benefits and risks. **Health and Disease** • Health includes physical and mental wellbeing. • Disease can be communicable or non-communicable. • Lifestyle factors such as diet, smoking and alcohol can increase disease risk. • Different diseases can affect and worsen each other. **Cancer** • Cancer is caused by uncontrolled cell division. • Benign tumours do not spread. • Malignant tumours spread through the body and form secondary tumours. • Cancer risk can be linked to lifestyle and genetic factors. **Plant Tissues and Transport**	• Answer GCSE extended-writing questions. • Evaluate medical treatments by considering risks and benefits. **Maths Skills** Pupils will learn to: • Understand size and scale in cells, tissues, organs and organ systems. • Calculate rates, including blood flow and reaction rates. • Convert data between graphs, tables and numerical forms. • Construct and interpret bar charts, histograms and frequency tables. • Use scatter graphs to identify correlations. • Understand sampling in scientific and epidemiological studies. • Analyse risk factor data using sampling and correlation. • Calculate means, surface area and volume. • Plot, draw and interpret scientific graphs and charts.	

		• Plants contain specialised tissues including xylem, phloem and meristems. • Root hair cells absorb water and minerals. • Xylem transports water and minerals. • Phloem transports sugars around the plant (translocation). • Stomata and guard cells control gas exchange and water loss. **Transpiration** • Transpiration is the loss of water from leaves. • Temperature, humidity, wind and light affect the rate of transpiration. • Transpiration rate can be measured and compared.		
Autumn 2	P2 – Electricity	**Electricity: Key Knowledge** **Circuits** • Circuit diagrams use standard symbols. • Current only flows in a complete (closed) circuit. • Current is the flow of electrical charge. • Current is the same everywhere in a single loop. **Current, Voltage and Resistance** • Potential difference (voltage) pushes charge around a circuit. • Resistance opposes the flow of current. • Higher resistance = lower current. • **V = I × R** **Component Resistance** • Ohmic conductors have constant resistance. • Filament lamp resistance increases as temperature increases. • Thermistor resistance decreases as temperature increases. • LDR resistance decreases as light intensity increases. • Diodes only allow current to flow in one direction. **Series Circuits** • One pathway for current. • Current is the same throughout. • Voltage is shared between components. • Total resistance = sum of all resistances. • Adding resistors increases total resistance. **Parallel Circuits** • More than one pathway for current. • Voltage is the same across each branch. • Total current is shared between branches. • Total resistance decreases when more branches are added.	**Practical Skills** Pupils will learn to: • Use circuit diagrams to build and check circuits. • Investigate factors affecting resistance. • Measure resistance using current and potential difference. • Draw accurate circuit diagrams with correct symbols. • Investigate I-V characteristics of resistors, filament lamps and diodes. • Explain how LDRs are used in automatic lighting circuits. **Literacy Skills** Pupils will learn to: • Answer GCSE extended-writing questions. • Use scientific vocabulary accurately. • Explain results and conclusions clearly. **Maths Skills** Pupils will learn to: • Use the equation **Q = I × t** (charge flow). • Calculate current, potential difference and resistance using **V = I × R**. • Interpret and analyse I-V graphs. • Identify linear and non-linear components. • Calculate current, voltage and resistance in series circuits.	End of topic Assessment

	C3 - Quantative Chemistry	**Mains Electricity -** UK mains supply is **AC (alternating current)**. • Frequency = **50 Hz**. • Voltage ≈ **230 V**. • AC changes direction; DC flows in one direction. **Electrical Safety** • **Live (brown):** carries voltage. • **Neutral (blue):** completes the circuit. • **Earth (green/yellow):** safety wire. • Live wires can remain dangerous even when switched off. • Earth wires prevent appliances becoming live. **Energy and Power -** Appliances transfer electrical energy into heat, light, sound or movement. • Energy transferred depends on power and time. • **P = V × I** • **P = E ÷ t** • Higher power appliances transfer energy faster. **The National Grid -** Transfers electricity from power stations to consumers. • Step-up transformers increase voltage for transmission. • Step-down transformers reduce voltage for homes. • High voltage reduces energy loss in cables. **Law of Conservation of Mass** • No atoms are created or destroyed in a chemical reaction. • Total mass of reactants = total mass of products. • Symbol equations must be **balanced** so the number of each type of atom is the same on both sides. • Understand: ○ **Multipliers (coefficients)** before formulas (e.g. **$2H_2O$**). ○ **Subscripts** within formulas (e.g. H_2O). **Relative Formula Mass (Mr)** • **Mr** = sum of the relative atomic masses (Ar) of all atoms in a formula. • In a balanced equation: ○ Total Mr of reactants = Total Mr of products (in the quantities shown). **Changes in Mass During Reactions** • Apparent mass changes occur when gases enter or leave the system. • Examples: ○ Metal + oxygen → metal oxide (mass increases as oxygen is gained). ○ Metal carbonate → metal oxide + carbon dioxide (mass decreases as CO_2 escapes).	• Calculate equivalent resistance in series circuits. • Use the equations: ○ **P = V × I** ○ **$P = I^2R$** ○ **E = P × t** ○ **E = Q × V** • Solve problems involving energy transfer and power. **Higher Tier Only** • Use the transformer equation: ○ **Vp × Ip = Vs × Is**. C3 **Practical Skills** Pupils will learn to: • Investigate mass changes in chemical reactions. • Use a range of apparatus to measure mass accurately. • Evaluate methods and sources of uncertainty. **Literacy Skills** Pupils will learn to: • Answer GCSE extended-writing questions. • Use scientific vocabulary accurately. • Explain results, conclusions, and evidence clearly. **Maths Skills** Pupils will learn to: • Calculate percentage by mass using relative atomic masses (Ar) and relative formula mass (Mr). • Calculate moles from mass and Mr, and vice versa.	

		• Use balanced equations and the particle model to explain mass changes in open systems. **The Mole** • Amount of substance is measured in **moles (mol)**. • Mass of 1 mole (g) = relative formula mass (Mr). • One mole contains **6.02×10^{23} particles** (Avogadro constant). • Applies to atoms, molecules, ions, and electrons. • One mole of any substance contains the same number of particles as one mole of any other substance. **Using Moles in Equations** • Balanced equations show the mole ratio between reactants and products. • Example: ○ $Mg + 2HCl \rightarrow MgCl_2 + H_2$ ○ 1 mol Mg reacts with 2 mol HCl to produce 1 mol $MgCl_2$ and 1 mol H_2. • Be able to: ○ Calculate masses from balanced equations. ○ Calculate reactant and product masses using mole ratios. **Determining Equation Balancing Numbers** • Convert masses (g) → moles. • Find the simplest whole-number ratio. • Use the ratio to balance the equation. • Be able to rearrange mathematical equations when required. **Higher Tier: Limiting Reactants** • One reactant is often used in **excess** to ensure the other is completely used up. • The reactant that runs out first is the **limiting reactant**. • The limiting reactant determines the maximum amount of product that can form. • Be able to explain this using moles or masses. **Concentration of Solutions** • Concentration can be measured in **g/dm^3** (grams per cubic decimetre). • Be able to: ○ Calculate the mass of solute in a given volume of solution. **Higher Tier:** Explain the relationship between: Mass of solute, Volume of solution, Concentration **Pathogens and Disease - Pathogens** are microorganisms that cause infectious disease. • Types of pathogen: **Viruses** (live inside cells and damage them), **Bacteria** (produce toxins that make us ill), **Fungi, Protists** Diseases spread by: Direct contact, Air droplets, Water, Animal vectors (e.g. mosquitoes)	• Represent results and estimate uncertainty using the range around the mean. • Use decimal and standard form. • Use ratios, fractions, and percentages. • Use mathematical symbols correctly (=, ≠, >, ∝, ~). • Rearrange equations and change the subject. • Substitute values into equations using appropriate units. • Use an appropriate number of significant figures.	

	B3 - Infection and response	**Required Disease Examples** **Human Defences Against Pathogens** **Non-specific Defences** • **Skin** acts as a barrier. • **Nose** traps pathogens with mucus and hairs. • **Trachea and bronchi** produce mucus; cilia move it away. • **Stomach acid** kills many pathogens. **Immune System** White blood cells defend the body by: • **Phagocytosis** - engulfing pathogens. • **Antibody production** - targeting specific pathogens. • **Antitoxin production** - neutralising toxins. **Vaccination** • Contains dead or inactive pathogens. • Stimulates white blood cells to produce antibodies. • Creates immunity and prevents illness. • High vaccination rates reduce the spread of disease (herd immunity). **Antibiotics and Medicines - Antibiotics** kill bacteria (e.g. penicillin). • Different bacteria require different antibiotics.	**Practical Skills** Pupils will learn to: **Literacy Skills** Pupils will learn to: • Answer GCSE extended-writing questions. • Use scientific vocabulary accurately. • Explain results, conclusions, and evidence clearly. • Evaluate the global use of vaccination in the prevention of disease. **Maths Skills** Pupils will learn to: • understand that the results of testing and trials are published only after scrutiny by peer review.	

Disease	Pathogen	How it Spreads	Key Effects	Prevention/Treatment
Measles	Virus	Droplets from coughs/sneezes	Fever, red rash, can be fatal	Vaccination
HIV/AIDS	Virus	Sexual contact, blood exchange	Attacks immune system	Antiretroviral drugs, safe sex
TMV	Virus	Plant-to-plant contact	Mosaic leaf discolouration, reduced photosynthesis	Remove infected plants
Salmonella	Bacteria	Contaminated food	Fever, cramps, diarrhoea, vomiting	Poultry vaccination, hygiene
Gonorrhoea	Bacteria	Sexual contact	Discharge, pain when urinating	Antibiotics, condoms
Rose Black Spot	Fungus	Water or wind	Black spots, leaf loss, reduced photosynthesis	Fungicides, remove infected leaves
Malaria	Protist	Mosquito vector	Recurrent fever, can be fatal	Mosquito control, nets

		• **Antibiotics do not kill viruses.** • Painkillers relieve symptoms but do not kill pathogens. • Antibiotic-resistant bacteria are an increasing concern. **Drug Development and Testing** **Sources of Drugs, Digitalis** → foxglove plant, **Aspirin** → willow plant, **Penicillin** → *Penicillium* mould. • Most modern drugs are synthesised by chemists. **Testing New Drugs** **Preclinical testing:** Cells, Tissues, Live animals **Clinical trials:** Healthy volunteers and patients, Start with very low doses, Determine safety, effectiveness and optimum dose. • Often use **double-blind trials** with a placebo.		

Spring 1	P4 -Atomic Structure	Pupils will learn:
		Atomic Structure
		• Atoms have a radius of about **1×10^{-10} m**.
		• An atom contains:
		  ○ A **nucleus** of protons and neutrons.
		  ○ **Electrons** arranged in energy levels around the nucleus.
		• The nucleus contains most of the atom's mass and is much smaller than the atom.
		• Electrons can move between energy levels by absorbing or emitting electromagnetic radiation.
		• **Protons** = positive charge, **Neutrons** = no charge, **Electrons** = negative charge.
		  ○ In a neutral atom: Number of protons = number of electrons.
		• **Atomic number** = number of protons.
		• **Mass number** = protons + neutrons.
		• **Isotopes** are atoms of the same element with different numbers of neutrons.
		• Atoms form **positive ions** when they lose electrons.
		
		Development of the Atomic Model
		• **Dalton:** atoms were solid, indivisible spheres.
		• **Thomson:** discovered electrons and proposed the **plum pudding model**.
		• **Rutherford:** alpha scattering experiment led to the **nuclear model**.
		• **Bohr:** electrons occupy fixed energy levels.
		• **Chadwick:** discovered neutrons.
		Required Comparisons
		• **Plum pudding model:** positive sphere with embedded electrons.
		• **Nuclear model:** tiny, dense, positively charged nucleus with electrons around it.
		• New evidence from experiments caused scientific models to change.
			Literacy Skills
			Pupils will learn to:
			• Answer GCSE extended-writing questions clearly and effectively.
			• Use scientific vocabulary accurately.
			• Explain results, conclusions, and evidence using scientific reasoning.
			• Understand how scientific ideas and methods develop over time.
			• Recognise the importance of publishing research and peer review to check scientific findings.
			Maths Skills
			Pupils will learn to:
			• Recognise and use numbers written in **standard form**.
			• Interpret isotope notation, including differences in mass and charge.
			• Determine the **half-life** of a radioactive isotope from given data.
			• **Higher Tier:** Calculate the decrease in radioactive emissions after a given number of half-lives and express it as a ratio.
			.
				End of topic Assessment
				MID Year Assessment

		Radioactivity • Some nuclei are **unstable** and undergo **radioactive decay** to become more stable. • Radioactive decay is **random**. • **Activity** = rate of decay, measured in **becquerels (Bq)**. • **Count rate** = number of decays detected per second. **Types of Nuclear Radiation** **Alpha (α)** 2 protons + 2 neutrons (helium nucleus), Strongly ionising, Short range in air, Stopped by paper. **Beta (β)** Fast-moving electron. Moderately ionising, Medium range in air, Stopped by thin aluminium. **Gamma (γ) -** Electromagnetic radiation, Weakly ionising, Long range in air, Reduced by thick lead or concrete. **Nuclear Equations -** Equations must balance **mass number** and **atomic number**. • **Alpha decay:** mass decreases by 4, atomic number decreases by 2. • **Beta decay:** mass unchanged, atomic number increases by 1. • **Gamma decay:** no change in mass or atomic number. **Contamination and Irradiation** **Contamination-** Unwanted radioactive material on or inside an object. • Hazard comes from radioactive decay within the material. **Irradiation -** Exposure to radiation from a source. • Does **not** make an object radioactive. • Safety precautions are needed when using radioactive sources. **Half-Life - Half-life** is the time taken for: ○ The number of radioactive nuclei to halve, or ○ The activity/count rate to fall to half its original value. • Radioactive decay is random, but large samples show a predictable half-life pattern.		
Spring 2	C4 - Chemical Changes B4 - Bioenergetics	**Oxidation and Reduction** • **Oxidation** = gain of oxygen or loss of electrons. • **Reduction** = loss of oxygen or gain of electrons. • Metals react with oxygen to form **metal oxides** (oxidation). **Reactivity Series - Order of Reactivity** **Potassium > Sodium > Lithium > Calcium > Magnesium > Zinc > Iron > Copper** • More reactive metals form positive ions more easily. • More reactive metals can **displace** less reactive metals from compounds. • Metals react with: ○ **Water** → metal hydroxide + hydrogen ○ **Acids** → salt + hydrogen	**C4 Practical Skills** Pupils will learn to: • Mix reagents to observe chemical changes and products. • Prepare a pure, dry soluble salt from an insoluble oxide or carbonate. • Use a Bunsen burner, water bath, or electric heater safely. • Investigate pH changes during neutralisation. • Investigate electrolysis of aqueous solutions using inert electrodes.	End of topic Assessment

		Extracting Metals • **Unreactive metals** (e.g. gold) occur naturally as elements. • Metals **less reactive than carbon** can be extracted by reduction with carbon. • Reduction removes oxygen from metal oxides. • Electrolysis is used for metals **more reactive than carbon**. **Redox Reactions (HT)** • Oxidation = loss of electrons. • Reduction = gain of electrons. • Be able to: ○ Identify oxidised and reduced substances. ○ Write ionic and half equations. **Acids and Metals** • Acids react with metals to produce: ○ **Salt + Hydrogen** • Reactions with magnesium, zinc and iron are required knowledge. **Neutralisation and Salts** **Reactions** • Acid + Alkali → Salt + Water • Acid + Base → Salt + Water • Acid + Carbonate → Salt + Water + Carbon Dioxide **Salt Names** • Hydrochloric acid → **Chlorides** • Nitric acid → **Nitrates** • Sulfuric acid → **Sulfates** • Be able to predict products and write salt formulae. **Making Soluble Salts** 1. Add excess insoluble solid to acid. 2. Filter off excess solid. 3. Evaporate water. 4. Crystallise and dry the salt. **pH and Acids** • Acids contain **H^+ ions**. • Alkalis contain **OH^- ions**. • pH scale: **0-14** ○ pH 7 = Neutral pH < 7 = Acidic pH > 7 = Alkaline **Neutralisation - $H^+ + OH^- \rightarrow H_2O$**	• Develop and test scientific hypotheses. **Literacy Skills** Pupils will learn to: • Answer GCSE extended-writing questions. • Use scientific vocabulary accurately. • Explain results, conclusions, and evidence using scientific reasoning. **Maths Skills** Pupils will learn to: • Describe neutrality and acidity using hydrogen ion concentration. • Relate pH values (whole numbers) to acidity and alkalinity.	

		Strong and Weak Acids
		Strong Acids -Fully ionised in solution. Examples: Hydrochloric acid, Nitric acid, Sulfuric acid
		Weak Acids - Partially ionised. Examples: Ethanoic acid, Citric acid, Carbonic acid
		Key Facts
		• Stronger acid = lower pH.
		• A decrease of 1 pH = 10× increase in H^+ concentration.
		• **Concentrated/dilute** refers to amount dissolved.
		• **Strong/weak** refers to degree of ionisation.
		Electrolysis
		• Ionic compounds conduct electricity when:
		  ○ Molten, or
		  ○ Dissolved in water.
		• These are called **electrolytes**.
		Movement of Ions
		• Positive ions → **Cathode (-)**
		• Negative ions → **Anode (+)**
		At the Electrodes
		• Cathode: **Reduction (gain of electrons)**
		• Anode: **Oxidation (loss of electrons)**
		
		Electrolysis of Molten Compounds
		• Cathode produces the **metal**.
		• Anode produces the **non-metal**.
		Example:
		• Molten lead bromide:
		  ○ Lead at cathode
		  ○ Bromine at anode
		Aluminium Extraction
		• Aluminium is extracted by electrolysis of molten **aluminium oxide**.
		• **Cryolite** is added to lower the melting point and reduce energy costs.
		• Carbon anodes must be replaced because they react with oxygen.
		
		Electrolysis of Aqueous Solutions
		At the Cathode
		• **Hydrogen** forms if the metal is more reactive than hydrogen.
		• Less reactive metals are deposited instead.
		At the Anode
		• **Halogens** form if halide ions are present.
		• Otherwise **oxygen** is produced.		

		Higher Tier: Half Equations • Cathode: $2H^+ + 2e^- \rightarrow H_2$ • Anode: $4OH^- \rightarrow O_2 + 2H_2O + 4e^-$ B4 - Bioenergetics **Photosynthesis Equation: Carbon dioxide + water → glucose + oxygen** • Symbols: **$CO_2 + H_2O \rightarrow C_6H_{12}O_6 + O_2$** • Photosynthesis is an **endothermic reaction** that transfers energy from light into chloroplasts. **Factors Affecting Photosynthesis: Temperature, Light intensity, Carbon dioxide concentration** • **Amount of chlorophyll** **Uses of Glucose** Glucose can be: Used in **respiration,** Stored as **starch,** Converted to **fats and oils,** Used to make **cellulose** for cell walls, Combined with **nitrate ions** to make **amino acids and proteins** **Respiration:** Respiration is an **exothermic reaction** that releases energy in living cells. • Energy is needed for: ○ Building larger molecules ○ Movement ○ Keeping warm • Can occur **aerobically** (with oxygen) or **anaerobically** (without oxygen). **Aerobic Respiration** • **Glucose + oxygen → carbon dioxide + water** • Symbols: **$C_6H_{12}O_6 + O_2 \rightarrow CO_2 + H_2O$** • Releases a **large amount of energy**. **Anaerobic Respiration** **In muscles:** • **Glucose → lactic acid** • Releases **less energy** than aerobic respiration. **In plants and yeast:** • **Glucose → ethanol + carbon dioxide** • Called **fermentation**. • Used in **bread and alcohol production**. **Exercise and Oxygen Debt** • Exercise increases **heart rate, breathing rate, and breathing depth**. • More oxygen is supplied to muscles for respiration. • If oxygen supply is insufficient, **anaerobic respiration** occurs. • **Lactic acid** builds up, causing an **oxygen debt**. • Muscles may become **fatigued** during prolonged exercise.	B4 **Practical Skills** Pupils will learn to: • Investigate how **light intensity affects the rate of photosynthesis** using pondweed or another aquatic plant. **Literacy Skills** Pupils will learn to: • Answer GCSE extended-writing questions. • Use scientific vocabulary accurately. • Explain results, conclusions and evidence using scientific reasoning. **Maths Skills** Pupils will learn to: • Measure and calculate rates of photosynthesis. • Extract and interpret data from graphs. • Plot and draw appropriate graphs with suitable scales. • Convert information between graphical and numerical forms. • **Higher Tier:** Explain graphs involving two or more limiting factors. • **Higher Tier:** Identify the limiting factor affecting photosynthesis. • **Higher Tier:** Use inverse proportion, the inverse square law and light intensity calculations. • **Higher Tier:** Apply knowledge of limiting factors to greenhouse crop production and profit.	

		• Lactic acid is carried to the **liver** and converted back into glucose. • Oxygen debt is the extra oxygen needed to remove lactic acid after exercise. **Metabolism - What is Metabolism?** • The sum of all chemical reactions in cells and the body. • Powered by energy released during respiration. • Controlled by enzymes. **Key Metabolic Processes** • Conversion of **glucose to starch, glycogen, and cellulose** • Formation of **lipids** from glycerol and fatty acids • Formation of **amino acids and proteins** from glucose and nitrate ions • **Respiration** • Breakdown of excess proteins to form **urea** **Important Biological Molecules** • **Sugars** → build carbohydrates • **Amino acids** → build proteins • **Fatty acids + glycerol** → build lipids (fats and oils) .		

Summer 1	C5 - Energy Changes
	C6 - Rates
		Energy Changes
		• **Energy is conserved** in chemical reactions.
		• **Exothermic reactions** transfer energy to the surroundings and increase temperature.
		• Examples: **combustion, oxidation, neutralisation**.
		• Uses: **hand warmers, self-heating cans**.
		• **Endothermic reactions** take in energy from the surroundings and decrease temperature.
		• Examples: **thermal decomposition**, **citric acid + sodium hydrogencarbonate**.
		• Uses: **cold packs for sports injuries**.
		• Identify reactions by the **temperature change of the surroundings**.
		Activation Energy and Reaction Profiles
		• Reactions occur when particles **collide with sufficient energy**.
		• **Activation energy** = minimum energy needed for a reaction.
		• Reaction profiles show:
		  ○ Reactants and products
		  ○ Activation energy
		  ○ Overall energy change
		• Exothermic: products have **lower energy** than reactants.
		• Endothermic: products have **higher energy** than reactants.
		Higher Tier: Bond Energies
		• Breaking bonds **requires energy**.
			C5 and C6Practical Skills
			Pupils will learn to:
			• Measure temperature changes in reactions and dissolving.
			• Investigate factors affecting temperature change (acids + metals, carbonates, neutralisation, displacement reactions).
			• Investigate how concentration affects reaction rate.
			• Measure reaction rates using:
			  ○ Gas volume produced
			  ○ Colour/turbidity changes
			• Investigate catalysts using metal salts and hydrogen peroxide decomposition.
			Literacy Skills
			Pupils will learn to:
			• Answer GCSE extended-writing questions.
			• Use scientific vocabulary accurately.
			• Explain results, conclusions, and evidence using scientific reasoning.
				End of topic Assessment

		• Forming bonds **releases energy**.
		• **Overall energy change = Energy to break bonds − Energy released forming bonds**.
		• Exothermic: more energy released than absorbed.
		• Endothermic: more energy absorbed than released.
		
		Rates of Reaction - Measuring Rate
		• **Rate = quantity of reactant used ÷ time**
		• **Rate = quantity of product formed ÷ time**
		• Measurements can use:
		  ○ Mass (g)
		  ○ Volume (cm^3)
		  ○ (HT) Moles (mol)
		• Units: **g/s, cm^3/s, mol/s**
		Factors Affecting Rate: Concentration, Pressure (gases), **Surface area, Temperature, Catalysts**
		Collision Theory
		• Reactions occur when particles collide with enough energy.
		• Increasing concentration, pressure, or surface area increases **collision frequency**.
		  ○ Increasing temperature increases: Collision frequency, Collision energy
		• Larger surface area = faster reaction.
		Catalysts
		• Speed up reactions without being used up.
		• Provide an **alternative pathway** with lower activation energy.
		• Different reactions require different catalysts.
		• **Enzymes** are biological catalysts.
		
		Reversible Reactions and Equilibrium
		Reversible Reactions - Can occur in both directions.
		• Represented by: **A + B ⇌ C + D**
		• Changing conditions can change the reaction direction.
		• If one direction is exothermic, the reverse is endothermic.
		Equilibrium
		• Reached in a **closed system**.
		• Forward and reverse reactions occur at the **same rate**.
		• Concentrations remain constant.
		
		Higher Tier: Le Chatelier's Principle
		Effect of Concentration
		• Increasing a reactant shifts equilibrium **towards products**.
			Maths Skills
			Pupils will learn to:
			• Calculate mean rates of reaction.
			• Draw and interpret reaction rate graphs.
			• Plot and analyse experimental data.
			• Draw tangents and use gradients to determine reaction rates.
			• (HT) Calculate gradients to find rates at specific times.
			• Use decimals, ratios, fractions, and percentages.
			• Estimate calculation results.
			• Convert between graphical and numerical data.
			Higher Tier Only
			Pupils will learn to:
			• Calculate energy transferred in reactions using supplied bond energies.	

		• Decreasing a product shifts equilibrium **towards products**. • The system opposes the change. **Effect of Temperature** **Endothermic reaction:** • Increase temperature → more products. • Decrease temperature → fewer products. **Exothermic reaction:** • Increase temperature → fewer products. • Decrease temperature → more products. **Effect of Pressure (Gases Only)** • Increase pressure → shifts to the side with **fewer gas molecules**. • Decrease pressure → shifts to the side with **more gas molecules**. **Must-Know Definitions** • **Exothermic:** Releases energy to surroundings. • **Endothermic:** Takes in energy from surroundings. • **Activation Energy:** Minimum energy needed for a reaction. • **Catalyst:** Speeds up a reaction without being used up. • **Equilibrium:** Forward and reverse reactions occur at the same rate. • **Le Chatelier's Principle:** A system at equilibrium responds to oppose a change in conditions.		
Summer 2	P5 - Forces	**Scalars and Vectors** • **Scalars** have magnitude only (e.g. distance, speed). • **Vectors** have magnitude and direction (e.g. force, displacement, velocity). **Contact and Non-Contact Forces** **Contact Forces:** Friction, Air resistance, Tension, Normal contact force **Non-Contact Forces:** Gravity, Magnetic force, Electrostatic force, Forces are pushes or pulls caused by interactions between objects. **Gravity and Weight** • **Weight** is the force caused by gravity. • Weight depends on gravitational field strength. **Equation** **Weight = Mass × Gravitational Field Strength** **Resultant Forces** • The **resultant force** is the overall force acting on an object. • Balanced forces → resultant force = 0. • Unbalanced forces → object accelerates. • Resultant force can be calculated for forces in a straight line. **Higher Tier** • Resolve a force into two perpendicular components.	**P5 - Practical Skills** Pupils will learn to: • Investigate how **force affects acceleration** when mass is constant. • Investigate how **mass affects acceleration** when force is constant. • Collect, analyse and evaluate results. **Literacy Skills** Pupils will learn to: • Answer GCSE extended-response questions. • Use scientific vocabulary accurately. • Explain results, conclusions and evidence using scientific reasoning. **Maths Skills** Pupils will learn to: **Speed** • Measure distance and time. • Calculate speed and average speed.	End of topic Assessment Summer Exam – Biology paper 1 Summer Exam – Chemistry paper 1 Summer Exam – Physics paper 1

		• Use vector diagrams and scale drawings. **Work Done and Energy Transfer -** Work is done when a force causes movement. **Equation** **Work Done = Force × Distance - W = Fs** • Work done is measured in **joules (J)**. • 1 joule = 1 newton moving an object 1 metre. • Work transfers energy. • Work against friction increases temperature. **Forces and Elasticity** **Deformation** • **Elastic deformation**: returns to original shape. • **Inelastic deformation**: does not return to original shape. **Hooke's Law -Force = Spring Constant × Extension** **F = ke** • Applies up to the **limit of proportionality**. **Elastic Potential Energy - E = ½ ke²** • Energy is stored when a spring is stretched or compressed. **Distance and Displacement** • **Distance** = total path travelled (scalar). • **Displacement** = straight-line distance and direction from start to finish (vector). **Speed and Velocity** • **Speed** = distance travelled ÷ time. • **Velocity** = speed in a given direction. **Typical Speeds** • Walking ≈ 1.5 m/s, Running ≈ 3 m/s, Cycling ≈ 6 m/s, Sound in air ≈ 330 m/s **Higher Tier** • Circular motion has constant speed but changing velocity. **Distance-Time Graphs** • Gradient = speed. • Steeper gradient = greater speed. • Horizontal line = stationary. **Higher Tier** Tangent gradient gives instantaneous speed. **Acceleration** Acceleration is the rate of change of velocity. **Equation Acceleration = Change in Velocity ÷ Time** **a = Δv / t** • Deceleration = slowing down. Falling objects reach **terminal velocity** when forces become balanced.	**Speed = Distance ÷ Time** **Distance = Speed × Time** **Velocity-Time Graphs** • Draw and interpret velocity-time graphs. • Calculate acceleration from the gradient. • **Higher Tier:** Calculate distance travelled from the area under the graph. **Acceleration** • Calculate acceleration. **Acceleration = Change in Velocity ÷ Time** • Know that free-falling objects accelerate at approximately **9.8 m/s²**. **Forces and Motion** • Use the proportionality symbol (∝). • Apply Newton's Second Law: **Force = Mass × Acceleration (F = ma)** **Reaction Time** • Measure and compare reaction times. • Know factors that increase thinking distance. • Analyse and evaluate reaction time data. **Momentum** • Calculate momentum. **Momentum = Mass × Velocity** **Key Equations** • **s = vt** • **a = Δv ÷ t** • **$v^2 - u^2 = 2as$** • **F = ma** • **Momentum = mv**	

		Newton's Laws **First Law:** If resultant force = 0: Stationary objects remain stationary. Moving objects continue at constant velocity. **Second Law:** Acceleration increases with force, Acceleration decreases with mass. **Third Law:** Forces between interacting objects are **equal and opposite**. **Stopping Distance = Thinking Distance + Braking Distance** **Factors Increasing Thinking Distance:** Tiredness, Alcohol, Drugs, Distractions **Factors Increasing Braking Distance:** Wet or icy roads, Poor tyres, Worn brakes, Greater speed **Braking and Energy** • Braking force reduces kinetic energy. • Friction transfers energy as heat to the brakes. • Greater speed requires greater braking force. • Large deceleration can cause overheating and loss of control. **Momentum** • Momentum depends on mass and velocity. • In a closed system: **Total momentum before = Total momentum after** • This is called **conservation of momentum**. • Used to explain collisions and impacts.		