



Curriculum Intent

Subject: Mathematics



PRIORITIES IN WHOLE SCHOOL CURRICULUM INTENT

- **Love of Learning:** relevance, purpose, interest, study habits
- **Knowledge:** acquisition of knowledge, understanding of key concepts, development of cultural capital
- **Effective communication:** vocabulary, reading, writing, speaking & listening

SUBJECT CURRICULUM INTENT

SUBJECT VISION

'Challenge and Inspire'

1. Promote Mathematical Understanding and Skills

- Develop students' abilities to recall and apply Mathematical concepts and formulae.
- Develop students' resilience and problem solving skills
- Develops students capacity to take largely abstract notations and to be able to apply them in a variety of contexts.

2. Provide a High quality education in Mathematics

- Offer a comprehensive and rigorous curriculum that meets the needs of students at all levels.

3. Create a vibrant and positive attitude to Mathematics

- Promote the enjoyment and love of Mathematics and understanding of its place and application in the real world.

Our Commitment Across KS3 and KS4

Throughout both key stages, we strive to create a mathematics experience that:

Celebrates success and encourages ambition for every learner.

Promotes equity by ensuring all students access a high-quality curriculum.

Develops independent thinkers who can reason, question, and solve problems.

Connects mathematics to the real world, helping students appreciate its relevance and power.

Equips students with digital, analytical, and critical skills needed for an ever-changing world.



Curriculum Intent

Subject: Mathematics



KS3

At Key Stage 3, our intent is to secure the essential knowledge and skills needed for success in later study. We focus on developing:

Fluency in number, algebra, geometry, ratio and probability, enabling students to manipulate and apply core methods with increasing accuracy and efficiency.

Secure conceptual understanding, supported by models, representations, and meaningful connections between mathematical ideas.

Confident use of mathematical vocabulary, allowing students to articulate reasoning and explain their methods clearly.

Independent and collaborative problem-solving, encouraging students to explore strategies, take risks, and build resilience.

Positive attitudes toward mathematics, fostering enjoyment, curiosity, and perseverance.

KS3 acts as a springboard: students leave it ready to tackle the growing complexity of KS4 with confidence and ambition.

KS4

A Curriculum That Leads to Mastery and Preparation for Life (KS4)

At Key Stage 4, our intent is to ensure every student is fully prepared for the demands of GCSE mathematics and is equipped with the numeracy and reasoning skills needed for future education, employment, and everyday life. We aim to:

Deepen and solidify prior learning, enabling students to apply mathematics flexibly and confidently in unfamiliar contexts.

Develop strong mathematical reasoning, including conjecture, justification, and evaluation of methods.

Enhance problem-solving expertise, with students tackling multi-step and real-world problems using strategic thinking.

Promote precision and accuracy, ensuring students can model, calculate, interpret, and communicate mathematically.

Provide appropriate challenge for all learners, offering stretch for the most able and targeted support so every student achieves their potential.

Build confident, numerate young people, ready for A-level study, apprenticeships, vocational routes, and life beyond school

YEAR 7

	KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
Term 1	- Algebra - Number - Statistics	- Sequences - Algebraic Notation - Expressions and Equations - Place Value, Ordering and Rounding - Rounding and Estimation - Four Operations - Averages and Range	- Describe and continue linear and non-linear sequences (both numerical sequences and patterns) - Find missing terms within sequences - Function Machines - Substitution - Understand equality, equivalence and using related facts to solve problems - Understand and use like terms (including collecting like terms) - Solve 1- and 2-step equations - Writing values as words and numerals - Understanding place value and ordering both integers and decimals - Rounding values - Rounding and estimating - Converting to and from Standard Form - Perform the 4 operations with integers and decimals - Understand and use the Order of Operations - Find the mean, mode, median and range	In the first term of Year 7, our curriculum intent is to build strong foundational knowledge that equips students with the confidence and fluency needed for success in secondary mathematics. Following the White Rose Maths scheme, we begin by developing students' algebraic thinking through sequences, function machines, substitution, and solving simple equations. These topics nurture mathematical reasoning by helping students recognise patterns, understand structure, and express generality. Students learn that algebra is not an isolated skill but a powerful language for describing relationships, supporting them to move seamlessly from numerical to symbolic representations. A focus on equality, equivalence and collecting like terms further strengthens their ability to manipulate and simplify expressions, setting the groundwork for more complex algebra in later years. Alongside this, we deepen students' number sense through work on place value, ordering, rounding, estimating and standard form, ensuring they can apply the four operations confidently with both integers and decimals. These skills are essential for mathematical accuracy and efficiency, and help students make informed choices when calculating and problem-solving. Finally, students are introduced to key statistical measures—mean, mode, median and range—allowing them to interpret, compare and summarise data. By integrating algebra, number and statistics throughout the term, the curriculum aims to develop resilient, flexible thinkers who can apply mathematical methods in varied and meaningful contexts.	Students develop a positive mathematical mindset by engaging with patterns, structure and problem-solving through algebra and number. As they explore sequences, equations, place value and operations, they build resilience by tackling challenges that encourage them to think logically, test ideas and learn from mistakes. The curriculum promotes independence as students learn to choose appropriate methods, justify their reasoning and communicate their thought processes clearly. Working with averages introduces opportunities to interpret everyday information, helping students appreciate the relevance of mathematics beyond the classroom and strengthening their confidence as young mathematicians.

YEAR 7

Term 2

	KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
	- Statistics - Number - Geometry and Measures	- Graphing and Data - Fractions, Decimals and Percentages - Directed Number - Fractions and Percentages of Amounts - Perimeter and Area	- Understand and use pictograms, bar charts (including dual and composite) - Plot coordinates - Plot and interpret scatter graphs (including with linear and non-linear correlation) - Draw and interpret Time-series graphs - Understanding fractional place value - Converting between fractions, decimals and percentages - Understanding the 4 operations with directed numbers - Finding fractions and percentages of amounts - Working with “reverse fraction” and “reverse percentage” problems - Increasing and decreasing by percentages - Converting metric units of length - Finding the perimeter of a polygon - Finding the perimeter of compound shapes - Finding the area of rectangles, parallelograms, trapeziums and triangles - Using algebra, form expressions to describe areas and perimeters of shapes	In the second term of Year 7, our curriculum intent is to broaden students' ability to represent, interpret and analyse information using a range of graphical and statistical methods. Building on their earlier work with data, students learn to understand and use pictograms, bar charts, time-series graphs and scatter graphs, including those showing linear or non-linear correlation. This helps them make sense of real-world contexts where data is used to identify trends, compare categories and draw conclusions. Plotting coordinates also strengthens their understanding of spatial relationships and prepares them for more advanced graph work in algebra and geometry. Through these topics, students develop the critical skill of interpreting data meaningfully rather than simply reading values. Alongside this, students extend their number knowledge into fractional place value and become increasingly fluent in converting between fractions, decimals and percentages. They apply this understanding in proportional reasoning tasks such as finding fractions and percentages of amounts, reverse problems, and percentage change. Mastery of the four operations with directed numbers further strengthens their numerical fluency and supports later work in algebra and problem solving. In geometry, students develop confidence with metric units, perimeter and area, tackling both simple and compound shapes. By forming algebraic expressions to describe perimeters and areas, they learn to generalise geometric relationships and recognise connections across different strands of mathematics. Overall, this term is designed to deepen understanding, strengthen reasoning and broaden the tools students have to solve increasingly sophisticated mathematical problems.	Students develop their ability to interpret the world around them through data and proportional reasoning. Working with graphs, percentages and conversions strengthens their analytical skills and encourages them to make sense of information they encounter in daily life. As they collaborate on tasks involving data representation and geometric measurement, students learn to listen, share strategies and work respectfully as part of a team. This term also builds perseverance and accuracy, as pupils tackle multi-step problems that require careful organisation and reflection on their methods. Through meaningful applied contexts, students grow in confidence and learn to approach unfamiliar problems with curiosity.

YEAR 7

Term 3

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
- Ratio, Proportion and Rates of Change - Number - Geometry and Measures	- Speed, Distance, Time - Properties of Number - Add and Subtract Fractions - Angles and Polygons	- Convert between units of time – seconds, hours, days weeks etc - Work with fractions of time - Solve problems with tables and timetables (eg, train times) - Solve problems with time and the calendar - Calculate speeds, distances and times - Draw and Interpret speed-time graphs, including calculating speeds - Factors, multiples, primes - Square, Cube, triangular numbers and their roots (and higher powers) - Prime Factorisation - HCF and LCM by list and Venn Diagram - Using factors of numbers to simplify calculations - Add and Subtract Fractions including with mixed numbers - Understand angle and line segment notation - Angles around a point and on a line facts - Vertically opposite angles - Solve problems using angles in triangle and quadrilateral facts - Understand angles in parallel lines - Understand angles in polygons - Simple proofs of angle facts	In the third term of Year 7, our curriculum intent is to strengthen students' confidence in applying mathematics to real-life contexts, with a particular focus on time, speed and proportional reasoning. Students develop practical problem-solving skills as they convert between units of time, interpret timetables and calendars, and calculate durations in everyday contexts. They also explore the relationship between speed, distance and time, learning to use formulas and interpret speed–time graphs to make informed decisions from visual data. These topics build mathematical resilience by requiring students to select appropriate methods, reason logically and communicate their solutions clearly. Alongside this applied work, students deepen their number knowledge through a structured study of factors, multiples and prime numbers. They explore square, cube and triangular numbers and their roots, use prime factorisation, and calculate highest common factors and lowest common multiples using lists and Venn diagrams. This strengthens their understanding of number structure and supports later algebraic manipulation. Students also secure key fraction skills—including adding and subtracting fractions and mixed numbers—which underpin a wide range of mathematical topics. In geometry, the focus turns to angle reasoning, giving students the tools to interpret, justify and prove geometric relationships. They learn formal notation and apply angle facts involving points, lines, triangles, quadrilaterals, polygons and parallel lines. Through increasingly complex problems and simple proofs, students develop mathematical reasoning skills that encourage them not only to find answers but to explain <i>why</i> they are true. By the end of the term, students are equipped with stronger problem-solving abilities, deeper conceptual understanding and a growing capacity for mathematical justification.	We emphasise real-life mathematical applications, supporting students in becoming more self-reliant and capable problem-solvers. Working with time, timetables and speed–distance–time relationships helps develop essential life skills such as planning, time management and interpreting real-world information. The study of factors, primes and angles encourages systematic thinking and logical reasoning, fostering students' ability to justify and explain their ideas clearly. As they engage in simple geometric proofs and increasingly sophisticated numerical problems, students learn patience, rigour and attention to detail. By the end of the year, they have not only strengthened their mathematical understanding but also developed the confidence, resilience and critical thinking skills needed for success across the curriculum and beyond.

YEAR 7 ENRICHED LEARNING EXPERIENCES

Junior Maths Challenge

YEAR 8

Term 1

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
- Ratio, Proportion and Rates of Change - Algebra - Number - Geometry and Measures	- Ratio - Proportion and Scale - Algebraic Manipulation - Coordinates and Graphs - Multiply and Divide Fractions	- Understand a ratio - Share using ratios - Simplify ratios including 1:n - Compare ratios and fractions - Solve problems with ratios - Solve problems with direct proportion - Use direct proportion graphs - Solve problems with similar shapes - Convert metric units of measurement - Solve problems with scales and maps - Form algebraic expressions - Understand the difference between formula, expression, identity and equations - Use directed number with algebra - Substitute into algebraic expressions, including with directed numbers - Expand and Factorise with single brackets - Expand a pair of binomials - Factorise quadratic expressions - Plot coordinates in all 4 quadrants - Understand lines parallel to the axes - Complete a table of values - Plot a graph from a table of values - Understand graphs in the form $y=x$, $y=x+a$ and $y=kx$ - Link $y=kx$ graphs to direct proportion - Plot a graph in the form $y=mx+c$ - Understand and find the gradient of a line, including negative gradients - Find the midpoint of a line segment - Multiply fractions and integers - Multiply a pair of fractions, including with mixed numbers - Understand the reciprocal - Divide a fraction by an integer - Divide an integer by a fraction - Divide a pair of fractions including mixed numbers	At the start of Year 8, our curriculum intent is to strengthen and extend students' proportional reasoning, enabling them to work confidently with ratio, direct proportion and scaling. Students learn not just to manipulate ratios but to interpret them meaningfully in real contexts, comparing ratios with fractions, sharing quantities and solving increasingly sophisticated problems. Through work with direct proportion graphs, similar shapes, scales and metric conversions, they begin to recognise proportional relationships in the world around them—from maps to enlargements to real-life measurement problems. This foundation develops their ability to reason multiplicatively, a key skill that underpins later topics in algebra, geometry and data. A significant strand of the term focuses on deepening algebraic understanding. Students progress from forming expressions and substituting into them to expanding and factorising increasingly complex expressions, including binomials and quadratic forms. They learn the distinctions between expressions, equations, identities and formulae, giving them a clearer conceptual framework for algebraic manipulation. Working with directed numbers within algebra strengthens accuracy and fluency, ensuring students can apply their skills confidently in more abstract settings. Graph work further extends this understanding, as pupils explore coordinate geometry in all four quadrants, plot linear functions, interpret gradients (including negative values), and make connections between graphs such as $y=x$, $y=x+a$, $y=kx$ and proportional relationships. This builds towards a more sophisticated grasp of functions and prepares students for more advanced algebra in Year 9. Alongside number and algebra, students develop important geometric and arithmetic fluency. Mastery of multiplying and dividing fractions—including mixed numbers—ensures students can navigate complex calculations and apply fraction skills across the curriculum. In geometry, students study symmetry and reflection, learning to reflect shapes and understand the properties of transformations.	In Term 1 of Year 8, students develop resilience and independence as they tackle increasingly complex problems in ratio, proportion, algebra and geometry. They build confidence in reasoning logically, justifying their methods, and applying mathematical skills to real-world contexts, while also strengthening attention to detail, perseverance, and the ability to visualise and communicate their ideas clearly.

YEAR 8

Term 2

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
- Geometry and Measures - Algebra - Number - Statistics	- Area, Volume and Density - Equations and Inequalities - Indices - Percentages	- Name 2-D and 3-D shapes - Area of a 2-D shape - Area of a compound shape - Recognise prisms (including language of edges and vertices) - Volume of cubes and cuboids - Convert metric units of mass and capacity - Understand the units of mass/density/volume - Solve problems with density, mass and volume - Solve simple 1- and 2-step equations - Solve more complex equations - Solve fractional equations - Form and solve equations - Solve equations with unknowns on both sides - Understand and use inequalities - Express Inequalities on a number line - Solve simple inequalities - Form and solve inequalities - Solve inequalities with unknowns on both sides - Add and subtract expressions with indices - Multiply and divide expressions with indices - Addition law for indices - Subtraction law for indices - Addition and subtraction laws for indices - Powers of powers - Negative indices - Fractional indices - Find a Percentage of an amount including using a decimal multiplier - Convert between percentages and decimals - Percentage increase and decrease (including using a multiplier) - Express one number as a fraction or a percentage of another (including percentages)	In Term 2 of Year 8, the curriculum intent is to consolidate and extend students' mathematical understanding across a broad range of interconnected strands. In geometry and measures, students develop fluency in calculating the area of 2-D and compound shapes, understanding prisms, and determining the volume of cubes and cuboids. They extend this to real-world contexts through problems involving mass, density and volume, applying metric conversions and developing proportional reasoning. This equips students with practical skills for interpreting and solving measurement problems in everyday and scientific contexts. Algebraic reasoning is further deepened through a progression from solving simple 1- and 2-step equations to tackling fractional equations, equations with unknowns on both sides, and inequalities. Students learn to express and solve inequalities on number lines and in algebraic form, building a strong foundation for advanced problem solving. Concurrently, work with indices—including negative and fractional powers, the laws of indices, and powers of powers—supports both algebraic fluency and understanding of exponential relationships, preparing students for higher-level algebra in later years. In number and data, students extend their understanding of percentages, including percentage change, percentage increase and decrease, and expressing numbers as fractions or percentages of another. They also develop proficiency with standard form, both for very large and very small numbers, and apply this knowledge in real-life and scientific contexts. In statistics, students learn to represent, interpret and compare data, including identifying outliers, calculating averages and ranges, and working with grouped frequency tables. By integrating number, algebra, geometry and data, Term 2 encourages students to make connections across mathematical domains and strengthens both problem-solving skills and conceptual understanding.	In Term 2 of Year 8, students develop perseverance and independence as they engage with more challenging algebraic, numerical, and measurement problems. They enhance their analytical thinking by interpreting data, applying percentages, and working with standard form, while also refining their attention to detail and accuracy. This term encourages students to reason logically, justify their methods, and approach complex problems with confidence and resilience, preparing them for higher-level mathematics.

YEAR 8

Term 3

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
- Geometry and Measures - Probability - Statistics - Algebra	- Angles in parallel lines and polygons - Tables and Probability - Circles - Graphs and Charts	- Understand Basic angles rules and notation - Understand angle facts for Angles between parallel lines and a transversal including ; Alternate, corresponding angles and co-interior angles - Solve complex problems with angles in parallel lines - Understand the Properties of special quadrilaterals and their diagonals - Find sides and angles in special quadrilaterals - Exterior angles of a polygon - Interior angles of a polygon - Interior angles in a regular polygon - Prove simple geometric facts - Probability vocabulary - The probability scale - Probability of a single event - Use the sum of probabilities being equal to 1 - Probability experiments - Sample spaces for 1 or more events - Probabilities from sample space diagrams - Two-way tables - Probabilities from two-way tables - Frequency trees - Probabilities from frequency tree - Circle vocabulary - Pi as a ratio - Circumference of a circle - Perimeter of parts of a circle - Area of a circle - Area of parts of a circle - Area and circumference of a circle - Perimeter of compound shapes with circles - Perimeter and area of compound shapes with circle - Pictograms and bar charts - Vertical line charts - Draw pie charts - Interpret pie charts	In Term 3 of Year 8, the curriculum intent is to consolidate and extend students' understanding of geometry, probability, data handling, and sequences, enabling them to reason logically and apply mathematical knowledge in a variety of contexts. In geometry, students deepen their understanding of angles, including those formed by parallel lines and a transversal—alternate, corresponding, and co-interior angles—and solve increasingly complex problems involving these relationships. They also study the properties of special quadrilaterals, their diagonals, and the interior and exterior angles of polygons, including regular polygons, developing the skills to calculate unknown sides and angles and construct simple geometric proofs. This strand strengthens spatial reasoning and logical thinking, equipping students to justify their methods and communicate their reasoning clearly. Alongside geometry, students develop a solid foundation in probability, learning key vocabulary and concepts such as probability scales, single events, and complementary probabilities. They explore probability through experiments, sample spaces, two-way tables, and frequency trees, developing the ability to calculate probabilities systematically and interpret outcomes accurately. This work promotes analytical thinking and helps students connect theoretical probability with practical examples. The term also focuses on circles and measurement, including the use of π to calculate circumference, area, and parts of circles, as well as the perimeter and area of compound shapes involving circular elements. Students are encouraged to solve problems that integrate multiple geometric concepts, building fluency and precision. In data handling, pupils learn to interpret and represent information using pictograms, bar charts, line graphs, vertical line charts, and pie charts, and to critically evaluate misleading representations. Finally, the study of sequences—including generating terms from rules, describing patterns, and working with sequences—enables students to apply their understanding of patterns and relationships in a variety of contexts.	In Term 3, students develop critical thinking and logical reasoning as they tackle complex problems in geometry, probability, and sequences. They build resilience and attention to detail through multi-step calculations, enhance their ability to interpret and communicate information clearly, and grow in confidence when applying mathematical concepts to real-world and abstract contexts.

YEAR 9

Term 1

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
- Algebra - Number - Geometry	Properties of Number Percentages Area & Volume Equations, Inequalities & Formulae Fractions RatesStandard Form	- Factors and multiples - Prime numbers & prime factorisation - HCF & LCM (including Venn diagrams) - Integers, real & rational numbers (Higher) Introduction to surds - Percentage increase and decrease - Express change as a percentage - Finding original amount after percentage change - Percentage problem solving - Repeated percentage change - Simple and compound interest - Nets of 3-D shapes - Area of 2-D shapes - Area & circumference of circles - Surface area of cubes and cuboids (Higher) Surface area of prisms & cylinders - Volume of prisms & cylinders (Higher) Volume of cones, pyramids, spheres - Unit conversions (area & volume) - Solving equations - Solving inequalities - Brackets in equations/inequalities - Inequalities with negatives (higher) - Unknowns on both sides - Substitution - Changing the subject (one-step and two-step) (Higher) Changing subject of complex formulae - Adding and subtracting fractions - Multiplying and dividing fractions - Fraction of an amount - Speed, distance, time - Distance–time graphs - Flow problems & graphs - Rates of change & units	This block strengthens core number understanding, providing essential foundations for later algebra, proportional reasoning, and higher-level mathematics. It ensures students begin the course with confidence in fundamental numerical concepts. This block develops proportional thinking through percentage-based reasoning and real-life applications. Students build practical problem-solving skills that link closely to financial literacy and everyday mathematical contexts. This block focuses on geometric understanding, progressing from 2-D shapes to 3-D structures. Students develop spatial reasoning and accuracy in calculating measures, supporting future learning across geometry and applied mathematics. This block builds essential algebraic fluency. Students learn to work with equations, inequalities, and formulae—skills that underpin much of secondary mathematics and support learning in science and technology. This block consolidates students' understanding of fractions. Strengthening accuracy and confidence here is crucial, as fractional reasoning supports later work in algebra, ratio, and proportionality. This block develops understanding of rates, units, and mathematical modelling. Students interpret graphs and real-world relationships, preparing them for functional mathematics and financial literacy.	Personal Development is embedded throughout the Year 9 mathematics curriculum and is strengthened through the structured sequence of curriculum blocks. The initial focus on core number and fractions builds confidence, accuracy and resilience, ensuring pupils have secure foundations as they move towards Key Stage 4. The percentages and proportional reasoning block supports financial literacy and decision-making, helping pupils understand real-life contexts such as budgeting and value for money. Through geometry, pupils develop spatial awareness, precision and problem-solving skills, while the algebra block promotes logical thinking, independence and perseverance when working with unfamiliar problems. Learning in rates, units and mathematical modelling encourages pupils to interpret information

YEAR 9

Term 2

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
Number Algebra Ratio and Proportion	- Maths & Money - Straight Line Graphs - Ratio & Proportion - Constructions & Congruence - Similarity - Algebraic Manipulation	- Understand a bank account - Value Added Tax (VAT) - Ways to pay - Ways to save - Jobs and pay - Investing - Borrowing (e.g. buying a house) - Running a house or business - Budgeting - Borrowing (loans) - Spending overseas - Insurance - Lines parallel to axes, $y = x$, $y = -x$ - Explore gradients - Explore intercepts $y = m x + c$ - Rearrange equations to $y = m x + c$ (<i>Extended</i>) - Find the equation of a line from a graph - Interpret gradient and intercepts in real-life graphs - Graph inequalities (<i>Extended</i>) - Direct proportion - Direct proportion and conversion graphs - Inverse proportion - Inverse proportion graphs (<i>Extended</i>) - Ratio problems (whole or part given) - Solve problems with ratio and algebra (<i>Extended</i>) - Draw and measure angles - Construct and interpret scale drawings - Construct triangles using ASA, SAS, SSS - Construct an angle bisector - Construct a perpendicular bisector - Construct a perpendicular from/to a point - Construct more complex polygons - Identify congruent figures - Identify congruent triangles - Recognise enlargement and similarity - Work out unknown lengths and angles in similar shapes - Solve problems with similar triangles (<i>Extended</i>) - Use ratio in right-angled triangles (<i>Extended</i>)	Focuses on financial education and practical money management skills including banking, VAT, budgeting, borrowing, investing, and insurance. These topics build essential life skills and provide context for later mathematical reasoning. Develops understanding of linear graphs, including gradients, intercepts, and equations of lines. Students learn to interpret and construct graphs, supporting both algebraic fluency and real-world data analysis. Explores proportional relationships through direct and inverse proportion, ratio, and conversion graphs. Students develop problem-solving skills that underpin many areas of mathematics and science. Introduces geometric constructions and angle measurement. Students develop precision and spatial reasoning through scale drawings, triangle construction, and identifying congruent figures. Builds on similarity and enlargement concepts, enabling students to solve problems involving scale, ratios, and similar triangles, with extensions for more complex applications.	Personal Development is a central feature of the Year 9 mathematics curriculum and is purposefully developed through the sequence of curriculum blocks. The financial education and money management block supports pupils in becoming financially literate, enabling them to understand banking, budgeting, VAT, borrowing and insurance, and to make informed, responsible decisions in everyday life. Through the study of linear graphs, pupils develop confidence in interpreting and representing information, strengthening analytical thinking and communication skills. Learning in ratio, direct and inverse proportion encourages pupils to reason logically, solve problems independently and recognise mathematical relationships that apply across science and real-world contexts. The geometric constructions

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
Geometry Algebra Probability	Pythagoras' Theorem Non-linear Graphs Probability Transformations Simultaneous Equations (optional) Trigonometry	Pythagoras' Theorem - Understand squares and square roots / squared numbers - Recognise right-angled triangles; identify hypotenuse and legs - Apply Pythagoras' theorem to find the hypotenuse - Apply Pythagoras' theorem to find a missing shorter side - Use Pythagoras in coordinate geometry (right-angled triangles on a grid) - Use Pythagoras in 3-D contexts (e.g., diagonal of a cuboid) - Understand proof/derivation of Pythagoras' theorem (higher strand) - Apply theorem in problem-solving (word problems, real-life contexts) Non-linear Graphs - Recall linear graphs as baseline ($y = mx + c$) - Understand quadratic expressions and plotting quadratic graphs - Draw basic quadratic graphs ($y = ax^2 + bx + c$) - Interpret characteristics: vertex, axis of symmetry, intercepts - Understand and draw reciprocal graphs ($y = 1/x$), hyperbolas - Understand and draw simple exponential graphs ($y = a^x$) - Interpret roots/intercepts, turning points, behaviour of non-linear graphs - Compare linear vs non-linear graphs; interpret in real-life contexts Probability - Understand probability vocabulary (event, outcome, sample space) - Calculate probability of a single event (theoretical) - Represent sample spaces (lists, tables, diagrams, tree diagrams) - Calculate probability from sample space diagrams - Understand relative frequency and experimental probability - Estimate expected outcomes from probability/frequency data - Discuss independent and dependent events; combined event probability - Use Venn diagrams/set notation if relevant - Solve context/word problems using probability reasoning Transformations - Understand and define transformations: translation, rotation, reflection, enlargement - Perform translations and describe them using vectors - Perform rotations about a point (various angles) - Perform reflections across lines (axis, x/y-axis, given line) - Perform enlargements with positive scale factors (from centre of enlargement) - Understand effect on shape properties (size, orientation, congruency, similarity) - Combine transformations and describe result - Recognise invariants under transformations - Solve problems using transformations (coordinates, mapping shapes, real-life contexts) Simultaneous Equations (optional) - Understand what simultaneous equations are (two or more equations with two or more unknowns) - Solve simultaneous equations graphically - Solve simultaneous linear equations algebraically (substitution) - Solve simultaneous equations by elimination - Interpret solutions (x,y) in context - Check solutions; discuss no solution / infinite solutions - Apply simultaneous equations to context/word problems - Solve more complex or rearranged formulae problems (higher strand) Trigonometry - Recall right-angled triangles and Pythagoras (from Block 1) - Understand sine, cosine, tangent ratios (SOHCAHTOA) - Use trig ratios to find missing side lengths given one side and one angle	Focuses on Pythagoras' theorem, teaching students to identify right-angled triangles and apply the theorem in 2-D, coordinate geometry, and 3-D contexts. Higher-level learners explore proofs and apply concepts to real-life problems. Introduces non-linear graphs, including quadratics, reciprocals, and exponentials. Students learn to plot, interpret key features, and compare linear and non-linear graphs within practical situations. Builds foundational probability knowledge, covering key terminology, calculating probabilities, representing sample spaces, and solving combined event problems. Students develop both theoretical and experimental probability understanding. Develops skills in geometric transformations: translation, rotation, reflection, and enlargement. Students perform transformations using vectors and coordinates, understand effects on shape properties, and solve related problems. Introduces simultaneous equations, focusing on graphical and algebraic solution methods. Students interpret solutions, check for special cases, and apply methods to word problems and more complex formulae. Covers trigonometry in right-angled triangles, teaching sine, cosine, and tangent ratios to find missing sides and angles. Students solve	Personal Development is embedded across the Year 9 mathematics curriculum through a carefully sequenced range of learning blocks. The study of Pythagoras' theorem develops logical thinking and confidence in applying mathematics to 2-D, 3-D and real-life problems. Through non-linear graphs, pupils strengthen their ability to interpret and compare complex information, supporting analytical and critical thinking. The probability block promotes informed decision-making and risk awareness, while geometric transformations develop precision, spatial awareness and accurate communication of mathematical ideas. Learning to solve simultaneous equations encourages independence and resilience when tackling more demanding algebraic problems. Finally, trigonometry builds problem-solving

YEAR 10

Term 1

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
	- Algebra – Algebraic Manipulation - Algebra – Equations, Inequalities, and Formulae - Algebra – Quadratic Expressions and Equations - Number – Percentages - Ratio, Proportion and Rates of Change – Ratio and Scale - Number – Work with Fractions	(Foundation & Higher Combined) Algebra – Algebraic Manipulation Foundation & Higher - Basic algebraic operations, simplifying expressions, collecting like terms - Expand brackets, factorise expressions, use algebraic identities Algebra – Equations, Inequalities, and Formulae Foundation: - Solve linear equations, simple inequalities, substitution into formulae, change the subject of formula - Higher: - Solve more complex equations/inequalities, change the subject of complex formulae Algebra – Quadratic Expressions and Equations Foundation: - Factorising simple quadratics, solving quadratics by factorisation - Higher: - Solve quadratics using formula, complete the square, graph quadratics Number – Percentages Foundation & Higher - Calculate percentages, percentage increase/decrease, simple problem-solving, Repeated percentage change, reverse percentages, simple and compound interest Ratio, Proportion and Rates of Change – Ratio and Scale Foundation: - Simplifying ratios, direct proportion, scaling quantities, ratio problems. - Higher: - Inverse proportion, ratio with algebra, complex scaling problems Number – Work with Fractions Foundation: - Adding, subtracting, multiplying, dividing fractions, fraction of an amount - Higher:	Algebra – Algebraic Manipulation This block develops students' foundational algebra skills, including simplifying expressions and collecting like terms. For higher-tier students, expanding, factorising, and using algebraic identities extend these skills, promoting fluency in manipulating complex expressions—a key tool for solving equations and modelling problems. Algebra – Equations, Inequalities, and Formulae Students consolidate the skills from Block 1 to solve linear equations and inequalities and substitute into formulae. Higher-tier learners advance to more complex equations, inequalities, and changing the subject of formulae, fostering algebraic reasoning and preparing them for applied problem-solving contexts. Algebra – Quadratic Expressions and Equations This block introduces quadratics, a critical algebraic concept. Foundation students focus on factorisation and solving simple quadratics, while higher-tier students extend to quadratic formula, completing the square, and graphing, building both procedural fluency and conceptual understanding. Number – Percentages Students develop numerical reasoning through percentages. Foundation students learn calculations, percentage change, and simple applications, while higher-tier students tackle repeated percentage change, reverse percentages, and interest problems, enabling application in financial and real-life contexts. Ratio, Proportion, and Rates of Change – Ratio and Scale This block strengthens proportional reasoning. Foundation students focus on simplifying ratios, direct proportion, and scaling, while higher-tier learners explore inverse proportion, algebraic ratios, and complex scaling, developing problem-solving skills and mathematical modelling abilities. Number – Work with Fractions Students consolidate arithmetic skills with fractions. Foundation learners work on basic operations and finding fractions of quantities, while higher-tier students apply algebraic techniques and manage complex fraction operations,	Personal Development is a key focus in the Year 10 mathematics curriculum, with each block building students' confidence and independence. The algebraic manipulation and equations, inequalities, and formulae blocks develop fluency and reasoning skills essential for solving complex problems and modelling real-life situations. The introduction to quadratic expressions and equations fosters both procedural skill and conceptual understanding, encouraging perseverance and abstract thinking. The percentages block enhances numerical reasoning with practical financial applications, promoting responsible decision-making. Through ratio and scale, students strengthen proportional reasoning and problem-solving abilities. Finally, the work with fractions block consolidates accuracy and fluency,

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
	- Number – Non-calculator Methods - Algebra – Straight Line Graphs - Probability – Probability - Number – Rounding and Estimation - Geometry and Measures – Perimeter, Area and Volume - Statistics – Interpret and Represent Data	Number – Non-calculator Methods Foundation: - Perform calculations without a calculator using addition, subtraction, multiplication, and division; use mental and written strategies Higher: - Apply non-calculator methods to more complex multi-step calculations and problem-solving Algebra – Straight Line Graphs Foundation: - Plot linear graphs from tables of values; identify gradients and intercepts Higher: - Find the equation of a line from a graph, interpret gradients and intercepts in context, graph inequalities Probability – Probability Foundation: - Understand basic probability vocabulary; calculate simple probabilities; represent sample spaces (lists, tables, diagrams) Higher: - Solve problems involving combined events, conditional probability, and relative frequency; use Venn diagrams and tree diagrams Block 4: Number – Rounding and Estimation Foundation: - Round numbers to nearest 10, 100, decimal places, significant figures; estimate sums, differences, products, and quotients Higher: - Apply rounding and estimation to multi-step problems and calculations in context Geometry and Measures – Perimeter, Area and Volume Foundation & Higher: - Calculate perimeter, area of rectangles, triangles, parallelograms, and volume of cuboids and prisms. Higher: - Calculate area and volume of circles, cylinders, prisms, and other 3-D shapes; solve real-life context problems Statistics – Interpret and Represent Data Foundation: - Read and interpret charts, tables, pictograms, bar charts, and line graphs	Number – Non-calculator Methods This block develops students' fluency in performing calculations without a calculator. Foundation learners focus on mental and written strategies for basic operations, while higher-tier students apply these methods to multi-step problems, enhancing numerical confidence and problem-solving skills. Algebra – Straight Line Graphs Students build a foundational understanding of linear graphs. Foundation learners plot graphs from tables and identify gradients and intercepts, while higher-tier learners find equations from graphs, interpret gradients and intercepts in context, and graph inequalities, linking algebraic and graphical representations. Probability – Probability This block introduces the language and concepts of probability. Foundation students calculate simple probabilities and represent sample spaces using lists, tables, and diagrams. Higher-tier learners extend to combined events, conditional probability, relative frequency, and advanced representations such as Venn and tree diagrams, developing analytical and reasoning skills. Number – Rounding and Estimation Students strengthen accuracy and numerical sense through rounding and estimation. Foundation learners round numbers to various degrees and make simple estimates, while higher-tier learners apply these skills to multi-step calculations and real-life contexts, supporting efficient problem-solving. Geometry and Measures – Perimeter, Area, and Volume This block develops spatial reasoning and measurement skills. Foundation students calculate perimeter, area, and volume of basic shapes, while higher-tier students tackle circles, cylinders, and complex 3-D shapes, applying skills to contextual problems and developing geometric reasoning. : Statistics – Interpret and Represent Data Students learn to collect, represent, and interpret data. Foundation learners read charts, tables, and diagrams, while higher-tier learners create and interpret data representations.	Personal Development is embedded in the Year 10 curriculum through carefully sequenced blocks that build confidence, independence, and problem-solving skills. The non-calculator methods block strengthens mental agility and numerical fluency, fostering resilience in complex calculations. Learning straight line graphs develops pupils' ability to connect algebraic and graphical reasoning, enhancing conceptual understanding. The probability block cultivates analytical thinking and decision-making through exploration of chance and risk. Through rounding and estimation, pupils improve accuracy and efficient problem-solving in real-world contexts. The perimeter, area, and volume block develops spatial awareness and measurement skills, encouraging precise and logical reasoning. Finally,

YEAR 10

Term 3

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
Geometry and Measures Statistics Number Algebra	- Geometry and Measures – Angles - Statistics – Graphs and Diagrams - Geometry and Measures – Vectors - Number – Factors and Powers - Geometry and Measures – Pythagoras’ Theorem and Trigonometry - Algebra – Simultaneous Equations	Geometry and Measures – Angles Foundation: - Measure and draw angles, calculate missing angles in triangles, quadrilaterals, and on a straight line - Solve angle problems in polygons, parallel lines, Higher: - circle theorems Statistics – Graphs and Diagrams Foundation: - Interpret and construct bar charts, pictograms, line graphs, and frequency tables Higher: - Draw and interpret histograms, cumulative frequency graphs, and box plots; compare data sets and solve contextual problems Geometry and Measures – Vectors Foundation: - Understand basic vector notation and diagrammatic representation; perform simple vector addition and subtraction Higher: - Solve problems using column vectors, position vectors, and apply vectors to geometric contexts Number – Factors and Powers Foundation: - Find factors and multiples; understand squares, cubes, and powers; calculate roots, Apply indices laws Higher: - Apply indices laws, fractional and negative powers, and solve related problems Geometry and Measures – Pythagoras’ Theorem and Trigonometry Foundation: - Identify right-angled triangles, apply Pythagoras’ theorem to find missing sides Higher: - Apply Pythagoras in 3-D contexts, use sine, cosine, tangent ratios to solve problems including angles and bearings Algebra – Simultaneous Equations Foundation: - Solve two linear equations graphically or by substitution. Solve simultaneous linear equations algebraically using substitution or elimination; solve contextual problems and interpret solutions Higher:	Geometry and Measures – Angles Students develop foundational geometric reasoning by measuring, drawing, and calculating angles in basic shapes. Higher-tier learners extend this to complex problems in polygons, parallel lines, and circle theorems, building spatial reasoning and proof skills. Statistics – Graphs and Diagrams This block enhances data literacy. Foundation students interpret and construct basic charts and tables, while higher-tier learners draw and analyse histograms, cumulative frequency graphs, and box plots, comparing datasets and solving real-world problems. Geometry and Measures – Vectors Students learn to represent and manipulate vectors. Foundation learners perform simple diagrammatic vector operations, while higher-tier students work with column and position vectors, applying vectors in geometric contexts to develop analytical reasoning. Number – Factors and Powers This block consolidates numerical skills. Foundation students focus on factors, multiples, squares, cubes, and roots. Higher-tier learners apply laws of indices, fractional and negative powers, and solve related problems, ensuring fluency for algebraic applications. Geometry and Measures – Pythagoras’ Theorem and Trigonometry Students develop measurement and problem-solving skills. Foundation learners apply Pythagoras’ theorem in 2-D contexts, while higher-tier learners extend to 3-D problems and use trigonometric ratios for angles, bearings, and applied contexts. Algebra – Simultaneous Equations This block strengthens algebraic problem-solving. Foundation students solve linear simultaneous equations graphically or by substitution, while higher-tier learners solve	Personal Development is central to the Year 10 curriculum, with each block developing confidence, independence, and problem-solving skills. The angles block builds spatial reasoning and proof skills, while graphs and diagrams strengthen data literacy and analytical thinking. Learning vectors promotes precision and logical reasoning in geometry. The factors and powers block consolidates numerical fluency, supporting algebraic confidence. Pythagoras’ theorem and trigonometry develop problem-solving in 2-D and 3-D contexts, fostering perseverance and real-world application. Finally, simultaneous equations enhance resilience and algebraic reasoning, preparing pupils effectively for GCSE study and future STEM learning.

YEAR 11 - Foundation

	KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
Term 1	• Number and Percentages • Algebra • Reasoning • Communication	• Number Review • Percentages • Expanding and factorising • Solving linear equations and inequalities • Changing the subject • Multiplicative reasoning • Geometric reasoning • Sequences • Transforming and constructing • Area, perimeter and volume	• Fraction Calculations • Decimal Calculations • Standard Form • Indices • Estimating and Rounding • HCF/LCM/Prime factors • Errors and Bounds • Utility Bills • Money problems • Percentage of an Amount • Percentage increase/Decrease • Percentage Change • Reverse Percentage • Simple Interest • Repeated percentage change • Expand and factorise with a single bracket • Expand binomials • Factorise quadratic expressions • Solve quadratic expressions by factorising • Solve quadratic equations equal to 0 • Solve linear equations • Solve inequalities • Forming expressions • Form and solve equations and inequalities in the context of shape • Change the subject of a simple formula • Changing the subject of a known formula • Use function machines • Substitute into expressions and formulae • Calculate with speed, distance and time • Calculate with density , mass and volume • Calculate with pressure, force and area • Unit conversions • Angles at a point • Angles on a straight line • Vertically opposite angles • Angles in parallel lines and shapes • Exterior and interior angles of polygons • Solve linear simultaneous equations – add to solving Equations	Topics based on high frequency GCSE exam questions for full and comprehensive cover of the GCSE level scheme of work	• The importance of maths across all potential careers • The importance of logical problem solving across all careers, not just those directly involving maths • Resilience when faced with a problem you don't immediately know how to solve • “Don't get zero” attitude • Success of historical and contemporary individuals through maths

YEAR 11 - Foundation

Term 1

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
		- Find the rule for the nth term of a linear sequence - Use nth term to generate or continue a sequence - Transform and describe translations - Transform and describe rotations - Transform and describe reflections - Transform and describe enlargements - Transform shapes using a combination of transformations - Describe transformations when using multiple transformations - Naming 2D/3D shapes and properties - Area - Perimeter - Problem Solving - Volume of prisms - Surface Area - Spheres and Cones		

- Graphs
- Geometry
- Ratio and Proportion
- Data

- Gradients and lines
- Non-linear graphs
- Using graphs
- Circles
- Crossover
- Direct proportion
- Ratio problems
- Probability

- Plot straight line graphs
- Interpret $y = mx + c$
- Find an equation from a straight line
- Identify Parallel lines
- Equation of a straight-line graph given one point and gradient
- Equation of a straight line given two points
- Determine whether a point is on a line
- Midpoints of a line segment
- Solve simultaneous equations graphically
- Plot and read from quadratic Graphs
- Plot and read from cubic Graphs
- Plot and read from reciprocal Graphs
- Recognise graph shapes
- Identify and interpret roots, intercepts and turning points of quadratics
- Construct and interpret conversion graphs
- Construct and interpret other real-life straight line graphs
- Fixed cost and cost per unit graphs
- Construct and interpret distance/time graphs
- Construct and interpret speed/time graphs
- Naming the parts of a circle
- Perimeter
- Area
- Part Circles
- Arcs and Sectors
- Cylinders – Volume and Surface area
- Problem Solving
- Congruence
- Similarity
- Bearings
- Scale Drawings
- Best buys
- Recipe problems
- Inverse Proportion
- Exchange Rates
- Ratio Notation
- Write a ratio as a fraction
- Ratios in the form 1:n
- Sharing in a ratio
- Ratio Problems
- Single Events
- Listing Outcomes
- Venn Diagrams
- Relative Frequency
- Frequency Trees
- 2 way tables
- Tree Diagrams

Topics based on high frequency GCSE exam questions for full and comprehensive cover of the GCSE level scheme of work

Term 3	• Revision			Topics based on high frequency GCSE exam questions for full and comprehensive cover of the GCSE level scheme of work	
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YEAR 11 - Higher

Term 1

KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
- Graphs - Algebra - Reasoning - Communication - Vectors	- Gradients and lines - Non-linear graphs - Using graphs - Expanding and factorising - Form and manipulate equations and inequalities - Functions - Multiplicative reasoning - Geometric reasoning - Simultaneous equations and sequences - Transforming, constructing, plans and elevations, scales and bearings - Vectors	- Plot straight line graphs - Interpret $y = mx + c$ - Find an equation from a straight line, a point and gradient, and two points - Determine whether a point is on a line - Midpoints of a line segment - Solve simultaneous equations graphically - Find the equations of perpendicular lines - Plot and read from quadratic, cubic and reciprocal graphs and recognise the graph shapes - Identify and interpret roots, intercepts and turning points of quadratics - Find and use the equation of a circle centre O - Find the equation of the tangent to any curve - Find the equation of the tangent to a circle - Construct and interpret conversion graphs, and fixed cost and cost per unit graphs - Construct and interpret distance/time graphs - Construct and interpret speed/time graphs - Estimate the area under a curve - Expand binomials - Factorise and solve quadratic expressions - Factorise and solve complex quadratic equations - Complete the square - Solve quadratic equations using the quadratic formula - Form and solve equations and inequalities in the context of shape - Change the subject of a formula - Change the subject where the subject appears more than once - Solve equations by iteration - Use function notation - Work with composite functions - Work with inverse functions	Topics based on high frequency GCSE exam questions for full and comprehensive cover of the GCSE level scheme of work	- The importance of maths across all potential careers - The importance of logical problem solving across all careers, not just those directly involving maths - Resilience when faced with a problem you don't immediately know how to solve "Don't get zero" attitude - Success of historical and contemporary individuals through maths - Encouragement to study maths and/or further maths at A-level

YEAR 11 - Higher

	KNOWLEDGE	CONCEPTS	SKILLS	RATIONALE	PERSONAL DEVELOPMENT
Term 1			- Solve quadratic inequalities - Calculate with speed, distance and time - Calculate with density , mass and volume; calculate with pressure, force and area - Construct and use direct proportion equations - Construct and use inverse proportion equations - Unit conversions (discuss throughout other topics) - Angles at a point, on a straight line, vertically opposite angles, and angles in parallel lines and shapes - Exterior and interior angles of polygons - Circle theorems - Solve linear simultaneous equations - Solve simultaneous equations with one quadratic - Use nth term to generate or continue a sequence and find the rule for the nth term of a linear sequence - Find the rule for the nth term of a quadratic sequence - Transform and describe translations - Transform and describe rotations - Transform and describe reflections - Transform and describe enlargements - Transform shapes using a combination of transformations - Describe transformations when using multiple transformations - Plans and Elevations - Scales and Bearings - Vector notation, including column vectors - Adding and subtracting vectors - Vector proofs		

- Number and Percentages
- Geometry
- Algebra
- Problem Solving Methods
- Data

- Number review
- Percentages
- Area, perimeter and volume
- Triangles
- Algebraic fractions
- Ratio problem solving
- Surd problem solving
- Probability

- Fraction Calculations and Decimal Calculations
- Standard Form
- Indices
- Estimating and Rounding
- HCF/LCM/Prime factors
- Errors and Bounds
- Surds
- Percentage of an Amount
- Percentage increase/Decrease
- Percentage Change
- Reverse Percentage
- Simple Interest
- Repeated percentage change
- Problem solving with area and perimeter
- Cones, spheres, cylinders and prisms (surface area and volume)
- Compound 3D shape
- Similar shapes and congruence
- Pythagoras (2D and 3D)
- Trigonometry (SOHCAHTOA) (2D and 3D)
- Sine and Cosine Rule
- 1/2absinc
- Simplifying algebraic fractions by factorising
- Adding and subtracting
- Multiplying and dividing
- Solving with algebraic fractions
- Problem solving with best buys, recipes and exchange rates
- Problem solving with ratios and fractions
- Problem solving with ratio and algebra e.g. $a:b = c:d = a/c = b/d$
- Problem solving with $1:n/n:1$
- Combining ratios
- Revisit simplifying surds
- Rationalising surds
- Rationalising surds with conjugates
- Geometry problem solving involving surds
- Exact trigonometry values
- Venn Diagrams and Sets
- Relative Frequency and Experimental Probability
- Tree Diagrams (independent, dependent and combined events)
- Probability involving algebra

Topics based on high frequency GCSE exam questions for full and comprehensive cover of the GCSE level scheme of work

Term 3	Revision			Topics based on high frequency GCSE exam questions for full and comprehensive cover of the GCSE level scheme of work	
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