



Co-op Academy
Belle Vue

CO-OP BELLE VUE MATHS FIVE YEAR OVERVIEW

NUMBER	ALGEBRA	GEOMETRY AND MEASURE
In both KS3 and KS4, students build a strong foundation in number concepts. They learn basic arithmetic operations, then progressing to more complex topics such as decimals, fractions, percentages, and powers. These skills are essential in daily life for tasks like budgeting, shopping, and understanding data presented in various formats. In the real world, a solid grasp of number concepts is crucial for making informed financial decisions, interpreting statistics, and understanding scientific and engineering principles that involve quantitative data.	Algebra is a fundamental mathematical concept taught in both KS3 and KS4. Students explore variables, equations, and expressions. They solve equations, work with inequalities, and learn about functions. Algebra provides a powerful tool for solving real-world problems in various fields, including science, engineering, and economics. It helps in understanding relationships, making predictions, and modelling scenarios, which are critical skills for careers in mathematics, technology, and research.	Geometry and measurement involve understanding the properties of shapes, angles, and dimensions. In KS3 and KS4, students learn about Euclidean geometry, trigonometry, area, volume, and concepts like Pythagoras' theorem. These skills have numerous practical applications, from designing structures and layouts in architecture to navigating in the real world using maps and coordinates. Geometry and measurement are essential for various professions, including engineering, construction, and geography.
STATISTICS	RATIO AND PROPORTION	PROBABILITY
Statistics in KS3 and KS4 focuses on data collection, representation, and analysis. Students learn to organise data in graphs, tables, and charts. They calculate measures of central tendency and dispersion, interpret data, and draw conclusions. Statistical skills are crucial for making informed decisions in fields such as economics and healthcare. They enable individuals to understand trends, make predictions, and evaluate the credibility of information, which is particularly relevant in today's data-driven world.	Ratio and proportion involve comparing quantities and understanding the relationships between them. Students learn how to simplify ratios, solve proportion problems, and apply these concepts to real-life scenarios, such as scaling recipes, mixing solutions, and financial planning. These skills are valuable in fields like cooking, chemistry, and business, where maintaining consistent proportions is essential for success.	Probability introduces students to the concept of uncertainty and chance. They study the likelihood of events occurring, calculate probabilities, and understand concepts like independent and mutually exclusive events. Probability is used extensively in fields like insurance, and statistics to assess risk and make predictions. It plays a crucial role in everyday decision-making, from weather forecasting to assessing the chances of success in various endeavours.



YEAR 7 LONG TERM PLAN

Year 7 begins with number sense, ensuring a solid foundation in place value and basic arithmetic. Order of operations and expressions are then introduced, facilitating critical thinking and problem-solving skills. As students progress to algebraic notation, terminology and solving equations, they learn the importance of algebraic thinking. Coordinates and shapes connect geometry to algebra, while factors and multiples build on previous knowledge of basic arithmetic. The year ends with fractions, decimals, and percentages, enabling students to transition from whole numbers to more complex number systems and understand their practical applications, which they started exploring in KS2.

Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
Number Sense & Calculations	Mathematical Formulations	Planar Geometry	Number Theory & Arithmetic	Geometry & Data Analysis	Ratio Analysis & Probabilistic Mathematics
Key concepts	Key concepts	Key concepts	Key concepts	Key concepts	Key concepts
Number sense Adding and subtracting Multiplying Dividing Calculating with negative numbers Order of operations	Expressions Substitution Solving equations Time Measures	Line and shape properties Perimeter Area Coordinates and shapes	Factors and multiples Primes Writing and comparing fractions Adding and subtracting fractions Single brackets	Angles Finding unknown angles Averages and range Tables and charts Collecting and presenting data	Proportion word problems Multiplying and dividing fractions Fractions of an amount Fractions, decimals and percentages Theoretical probability
Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
PKR 1: Number lines and place value PKR 2: Rounding, addition and subtraction PKR 3: Multiplication PKR 4: Division	PKR 7: Algebraic notation, terminology and simplifying PKR 8: Substitution PKR 9: Solving equations PKR 10: Time	PKR 12: Geometric notation and properties PKR 13: Perimeter PKR 14: Area PKR 15: Coordinates	PKR 16: Factors, multiples and primes PKR 17: Write, simplify and order fractions PKR 18: Mixed numbers, improper fractions, and addition		



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PKR 5: Directed numbers, and roots and powers PKR 6: Order of operations	PKR 11: Measures		and subtraction PKR 19: Single brackets		
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YEAR 8 LONG TERM PLAN

Building upon Year 7's algebraic foundation, Year 8 delves deeper into solving equations and introduces rules for mathematical patterns through term-to-term and position-to-term rules. Ratio and scale diagrams enhance students' ability to apply mathematical concepts to real-world situations, while coordinate, area and circumference further develop geometric understanding. Year 8 also introduces standard form and Venn diagrams, which bridge algebra and set theory, promoting problem-solving and logical reasoning. Students are guided to think critically and solve complex problems, extending their KS2 knowledge into more abstract mathematical concepts.

Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
Financial Mathematics & Indices	Progressions & Proportions	Geometric Precision & Standard Form	Venn Diagrams & Volumetric Geometry	Graphs, Transformations, Angles and Inequalities	Statistics and Algebraic Expressions
Key concepts	Key concepts	Key concepts	Key concepts	Key concepts	Key concepts
Percentages of amounts Percentage change Calculating with money Index laws Solving equations	Term-to-term rules Position-to-term rules Ratio Scale diagrams	Significant figures Coordinates and midpoints Area and units Area and circumference Standard form and ordinary numbers	Venn diagrams Factors, multiples and primes Nets Surface area Volume	Plotting graphs and finding equations Transforming shapes Finding unknown angles Linear inequalities	Drawing and interpreting statistical diagrams Double brackets Fractions review Algebraic fractions Fractions and recurring decimals
Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
PKR 1: Percentages PKR 2: Value for money and indices PKR 3: Solving equations 1 PKR 4: Solving equations 2	PKR 6: Sequences 1 PKR 7: Sequences 2 PKR 8: Representing and simplifying ratios PKR 9: Using ratios	PKR 10: Rounding and estimating PKR 11: Coordinates PKR 12: Area and units PKR 13: Circles PKR 14: Standard form	PKR 15: Venn diagrams PKR 16: LCM and HCF PKR 17: 3D shape properties and surface area PKR 18: Volume and units		



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PKR 5: Solving equations 3					
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YEAR 9 LONG TERM PLAN

Year 9 solidifies and extends the foundational knowledge acquired in the previous years. It revisits fractions, decimals and percentages while delving deeper into linear inequalities and quadratic equations. These topics provide students with the tools to solve more complex mathematical problems. Pythagoras' Theorem is introduced with 2D geometry, and speed and rates connect algebra with real-world applications. Year 9 introduces more abstract topics such as vectors and error intervals to enhance problem-solving skills and demonstrate real-world relevance. The progression from Year 7 to 9 reinforces critical thinking and resilience in tackling increasingly challenging topics.

Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
Fractional Probability & Standardised Representation	Inequalities, Equations, Formulae & Geometric Constructs	Geometric Precision, Proportional & Pythagoras	Graphical Kinematics & Compound Metrics	Quadratics, Angle Geometry & Transformations	Congruence, Data Handling, and Vector Geometry
Key concepts	Key concepts	Key concepts	Key concepts	Key concepts	Key concepts
Fractions, decimals and percentages review Percentage change Theoretical and experimental probability Calculations with standard form	Linear inequalities Factorising and solving quadratic equations Rearranging formulae Constructing bisectors and perpendicular lines Circles and cylinders	Error intervals Representations of 3D shapes Pythagoras' theorem in 2D Ratio Proportion word problems	Equations of linear graphs Speed and rates Distance-time graphs	Plotting and interpreting quadratic graphs Angles Bearings Transforming shapes	Similarity Congruence Collecting and presenting data Scatter graphs Grouped data Column vectors Graphical simultaneous equations Trigonometry in 2D Piece-wise, exponential and reciprocal graphs
Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
PKR 1: FDP PKR 2: Percentages PKR 3: Percentage	PKR 6: Inequalities PKR 7: Factorising and solving quadratics	PKR 11: Error intervals PKR 12: Plans and elevations	PKR 16: Straight line graphs PKR 17: Rates of	PKR 19: Quadratic graphs PKR 20: Angles in	



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change PKR 4: Probability PKR 5: Calculations with standard form	PKR 8: Changing the subject PKR 9: Bisectors and sectors PKR 10: Cylinders	PKR 13: Pythagoras' Theorem PKR 14: Ratio PKR 15: Proportion	change PKR 18: Distance-time graphs	parallel lines PKR 21: Angles in polygons PKR 22: Bearings PKR 23: Mixed transformations	
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YEAR 10 LONG TERM PLAN

In Year 10, the curriculum for all students builds on the foundational knowledge from previous years. It starts with percentage change and surface area, which draw from work carried out at KS3 on these topics. Linear simultaneous equations and rearranging formulae have roots in Year 7 and 8's equation-solving skills. Right-angled trigonometry and equations of linear graphs are extensions of Year 9's work on trigonometry and linear graph equations. Venn diagrams, set notation, and independent events are more advanced concepts introduced in Year 8 and 9. Tier of entry choices have been left until late in Year 10 to ensure that learners are securing the depth of knowledge they need to move into the final phase of the GCSE, no matter which tier of entry they follow.

FOUNDATION

The Year 10 foundation curriculum is carefully structured to build upon students' prior knowledge and prepare them for GCSE exams. It starts with topics like arithmetic and geometric sequences, transforming shapes, and index laws, which serve as foundational concepts. It gradually progresses to more advanced areas like expanding and factorising brackets, cumulative frequency graphs, and box plots, providing a structured and logical transition. This sequencing ensures that students reinforce fundamental skills while introducing new concepts, equipping them with the necessary knowledge to excel in their GCSE exams.

HIGHER

The Year 10 higher topics are strategically sequenced to build upon prior knowledge while preparing students for GCSE exams. They begin with quadratic and geometric sequences, extending patterns introduced in earlier years. Direct and inverse proportion concepts are revisited and applied to more complex scenarios. Transforming shapes and working with bounds reinforce geometry skills and cumulative frequency graphs and box plots introduce advanced data interpretation. This order ensures a gradual progression, deepening understanding and providing a strong foundation for GCSE exams.

Block 1	Block 2	Block 3	Block 4	Block 5 (F)	Block 5 (H)	Block 6 (F)	Block 6 (H)
Change, Area and Volume	Simultaneous Equations, Formulae, Trigonometry and Constructions	Graphs, Sets and Events	Rates, Ratios and Graphs	Sequences, Sampling, Proportion, Transformations and Bounds (F)	Sequences, Sampling, Proportion, Transformations and Bounds (H)	Indices, Brackets, Data and Diagrams (F)	Indices, Recurring Decimals, Brackets and Cumulative Frequency (H)
Key concepts	Key concepts	Key concepts	Key concepts	Key concepts	Key concepts	Key concepts	Key concepts
Percentage change	Linear simultaneous	Equations of linear graphs	Density and pressure	Arithmetic and geometric	Quadratic and geometric	Index laws Expanding and	Index laws Fractions and



Surface area Volume	equations Rearranging formulae Right-angled trigonometry Constructions and loci	Plotting and interpreting real-life graphs Venn diagrams and set notation Independent and dependent events	Working with ratios and algebra Velocity-time graphs Cubic, reciprocal and exponential graphs	sequences Sampling Direct and inverse proportion Transforming shapes Error intervals	sequences Sampling Direct and inverse proportion Transforming shapes Bounds	factorising brackets Grouped data Drawing and interpreting statistical diagrams	recurring decimals Expanding and factorising brackets Cumulative frequency graphs Box plots
Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
GCSE papers TBC							



YEAR 11 LONG TERM PLAN				
FOUNDATION		HIGHER		
The Year 11 foundation curriculum is a deliberate approach aimed at effectively preparing students for their GCSE exams and life in the real world, ensuring a logical and sequential progression. Topics at the start of the year establish a solid base, reinforcing essential arithmetic and algebraic skills. As the year progresses, students tackle the major areas, all being concepts crucial for the GCSE. The inclusion of topics, such as percentage change and compound measures, towards the end helps students apply their skills to real-life situations. The time specifically dedicated to exam preparation provides focused revision and practice, which is critical in the lead-up to the GCSE exams. This carefully planned order not only ensures a strong foundation but also further develops GCSE-relevant content, facilitating a smooth transition for students and enhancing their chances of success in the GCSE exams by consolidating their skills and knowledge while sharpening their exam-taking abilities during the revision period.		The Year 11 higher curriculum is a deliberate approach aimed at effectively preparing students for their GCSE exams and life in the real world. It begins with advanced algebra topics, reinforcing manipulation skills. The topics that follow extend their understanding of equations whilst reinforcing high-level problem-solving. The introduction of trigonometric ratios provides a deep understanding of trigonometry essential for the GCSE, leading to developing Pythagoras' Theorem further into 3D. Histograms further develop understanding of data interpretation, while conditional probability delves into advanced probability. The subsequent topics build on these concepts, guiding students toward the more complex and abstract aspects of mathematics. Finally, the curriculum ensures students are well-prepared for the GCSE exams, providing a structured revision period to consolidate their knowledge and skills.		
Block 1 (F)	Block 2 (F)	Block 3 (F)	Block 4 (F)	Block 5-6 (F)
Factors, Multiples, Fractions and Equations (F)	Right-Angled Triangles, Area, Volume, Angles and Statistics (F)	Probability, Inequalities, Vectors and Change (F)	Ratios, Proportion, Standard Form, Sequences and Linear Graphs (F)	Exam preparation
Key concepts	Key concepts	Key concepts	Key concepts	
HCF and LCM Fractions and mixed numbers Simplifying expressions Solving equations Simultaneous equations	Pythagoras' theorem and trigonometry Surface area Volume Finding unknown angles Drawing and interpreting	Theoretical and experimental probability Linear inequalities Vector problems Percentage change Calculating with compound	Working with ratios and algebra Proportion word problems Calculating with standard form Arithmetic and geometric	



	statistical diagrams	measures	sequences Equations of linear graphs	
Block 1 (H)	Block 2 (H)	Block 3 (H)	Block 4 (H)	Block 5-6 (H)
Surds, Algebraic Fractions, Quadratic and Simultaneous Equations (H)	Trigonometry, Pythagoras, Circle Theorems and Histograms (H)	Probability, Inequalities, Functions and Graph Transformations (H)	Iteration, Proof, Similar Shapes and Non-Linear Graphs (H)	Exam preparation
Key concepts	Key concepts	Key concepts	Key concepts	
Calculating with surds Rationalising denominators Calculating with algebraic fractions Solving quadratic equations Simultaneous equations	Trigonometric ratios and graphs Non right-angled trigonometry 3D Pythagoras' theorem and trigonometry Circle theorems Histograms	Conditional probability Linear and quadratic inequalities Substituting into functions Finding composite and inverse functions Transforming graphs	Using iterative formulae Writing algebraic proofs Area and volume of similar shapes Vector proofs Writing geometric proofs Non-linear graphs	
Assessment				
GCSE papers TBC				