St Paul's Academy
Maths 5 Year Curriculum Overview

At St Paul's Academy, we believe that students deserve a creative and ambitious mathematics curriculum, rich in skills and knowledge, which ignites curiosity and prepares them well for everyday life, future employment and inspires students to study Maths further at higher education. Our mathematics curriculum gives students the opportunity to:

- become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and preserving in seeking solutions.
- communicate, justify, argue and prove using mathematical vocabulary.
- develop their character, including resilience, confidence and independence, so that they contribute positively to the life of the school, their local community and the wider environment.

Disciplinary Knowledge



Reason mathematically - The process of applying logical and critical thinking to a mathematical problem in order to decide upon the correct strategy to use or not use. In reaching a solution.



Build mathematical fluency- Developing the fundamental skills within mathematics through varied forms of frequent practice. While also being able to recall key facts and information of key principles.

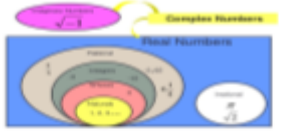


Connections between topics in Maths - Identify connections among mathematical ideas; understand how mathematical ideas interconnect and build on one another to produce a coherent whole



Problem solve in context - The ability to use and compare different mathematical principles in order to solve problems given in a variety of different contexts. Through strategies such as reflection, analysis and modelling

Substantive Knowledge



Number



Algebra



Ratio & Proportion



Geometry



Probability

Statistics

St Paul's Academy School
Maths Curriculum Map – Topics/Units by Half Term

SK Themes and colours	Number	Algebra	Ratio & Proportion	Geometry	Probability	Statistics
DK Big Ideas and colour	Reason mathematically	Mathematical fluency	Connections between topics in Maths	Problem solve in context		

KS3	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	**Number skills** *Mental Maths, BIDMAS, Four Operations, FINANCE: Time & Money, Negative Numbers, Factors, Multiples & Primes, HCF & LCM by Listing, Square & Triangle Numbers* **Analysing & Displaying Data** *Mode, Median, Range, Displaying Data, Grouping Data, Comparing Data: Averages & Range, Line Graphs & More Bar Charts,Using Spreadsheets*	**Expressions, Functions, Formulae** Functions, Simplifying Expressions, Expanding Brackets, Writing Expressions, STEM: Substituting into Formulae **Decimals & Measures** Ordering & Rounding, Length, Mass & Capacity, Scales & Measures, Working with Decimals inc. Mentally, Perimeter, Area, STEM: More Units	**Fractions & Percentages** Comparing, Simplifying, Adding & Subtracting, Fractions of Amounts, Fractions & Decimals, Understanding Percentages, Percentages of Amounts **Probability** Language of Probability, Probability Scale, Outcomes, Calculating Probabilities, Experimental Probability, FINANCE: Expected Outcomes	**Ratio & Proportion** Direct Proportion, Unitary Method, Writing Ratios, Simplifying Ratios, Sharing in a Given Ratio, Scale & Measures, Proportions & Fractions, Proportions & Percentages	**Lines & Angles** Lines Angles & Triangles, Estimating Measuring & Drawing Angles, Drawing Triangles Accurately, STEM: Calculating Angles, Angles in Triangles, Quadrilaterals **Sequences & Graphs** Sequences, Pattern Sequences, Coordinates & Midpoints, Extending Sequences, Linear Graphs, Position-to-Term Rules	**Transformations** Congruent Shapes & Enlargements, Symmetry, Reflection, Rotation, Translations & Combined Transformations
	SK / DK	SK / DK	SK / DK	SK / DK	SK / DK	SK / DK
Year 8	**Number** Calculations, Calculations with Negative Integers, Powers & Roots, Powers, Roots & Brackets, Index Notation, Prime Factor Decomposition, HCF & LCM by Prime Factors **Area and Volume** Area of Triangles, Parallelogram & Trapezia, Volume of Cubes & Cuboids, 3D Shapes: Nets and Plans & Elevations, Surface Area of Cubes & Cuboids, Problems & Measures	**Statistics, Graphs & Charts** Pie Charts, Using Tables (Frequency Tables, Mean & Two-Way Tables), Stem & Leaf Diagrams, Comparing Data, Scatter Graphs, FINANCE: Misleading Graphs **Expressions & Equations** Algebraic Powers, Expressions & Brackets, Factorising Expressions, One-Step Equations, Two-Step Equations, Equations with an Unknown on Both Sides	**Real-Life Graphs** Conversion Graphs, Distance-Time Graphs, Line Graphs, Complex Line Graphs, STEM: Graphs of Functions, More Real-Life Graphs: Linear & Non-Linear **Decimals & Ratio** Ordering & Rounding, Place Value Calculations, Adding, Subtracting, Multiplying & Dividing by Decimals, Ratio & Proportion	**Lines & Angles** Quadrilaterals: Properties & Angles, Alternate Angles & Proof, Geometrical Problems inc. Corresponding Angles, Angles in Polygons, Solving Geometric Problems	**Calculating with Fractions** Adding & Subtracting Fractions, Multiplying Fractions, Fractions, Decimals & Reciprocals, Dividing Fractions, Four Operations with Mixed Numbers **Straight-Line Graphs** Direct Proportion on Graphs, Linear Graphs & Gradient, Midpoints, y=mx+c, STEM: Direct Proportion Problems	**Fractions Decimals Percentages** Fraction & Decimals, Equivalent Proportions, Writing Percentages, Increase/Decrease by a Percentage, Simple Interest, Reverse Percentages, FINANCE: Solving Problems

			with Decimals, STEM: Using Ratios			
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Year 9 H	**Number** *Product Rule for Counting, Rounding to Significant Figures & Estimating, Estimating Powers & Roots, Prime Factor Decomposition, Highest Common Factor & Lowest Common Multiple by Prime Factors, Calculating with Powers & Roots, Laws of Indices, Negative & Fractional Indices, Standard Form, Surds*	**Algebra** Algebraic Indices, Expanding & Factorising Expressions, Identities, Solving Equations Involving Brackets & Numerical Fractions, Forming & Solving Equations, Substituting into Formulae, Rearranging Formulae, Linear Sequences, Non-Linear & Quadratic Sequences, Expanding Double Brackets, Factorising Quadratic Expressions	**Interpreting and representing data** *Stem & Leaf, Frequency Polygons, Pie Charts, Time Series, Scatter Graphs, Line of Best Fit, Averages & Range, Two-Way Tables, Appropriate Diagrams, Misleading Graphs* **Fractions, Ratio and Proportion** *Fractions, Ratio, Ratio & Proportion, Percentages (Simple Interest, Percentage Change & Reverse Percentages), FDP, Recurring Decimals to Fractions*	**Angles & Trigonometry** Angles in Triangles & Quadrilaterals, Angles in Polygons, Pythagoras' Theorem, Trigonometry	**Graphs** Linear Graphs, Distance-Time Graphs & Velocity-Time Graphs, Real-Life Graphs, Line Segments (Midpoints, Gradient & Equations of Parallel & Perpendicular Lines), Quadratic Cubic & Reciprocal Graphs **Area and Volume** Compound Shapes & Trapezia, Units & Accuracy (Error Intervals & Bounds), Prisms, Circles, Sectors of Circles, Cylinders & Spheres, Pyramids & Cones	**Transformations & Constructions** Plans & Elevations, Reflection & Rotation, Enlargement, Translations & Combinations of Transformations, Bearings & Scale Drawings, Constructions, Loci
	SK 				
	DK 				

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10 H	**Equations & Inequalities** Quadratic Equations, Completing the Square, Linear Simultaneous Equations, Linear & Quadratic Simultaneous Equations, Linear Inequalities **Probability** Combined Events (Product Rule & Sample Space Diagrams), Mutually Exclusive Events, Experimental Probability, Independent Events & Tree Diagrams, Conditional Probability, Venn Diagrams & Set Notation	**Multiplicative Reasoning** Compound Interest & Depreciation, Compound Measures: Speed, Density, Pressure, Using Kinematics Formulae, Direct & Inverse Proportion	**Similarity & Congruence** Congruent Triangles, Geometric Proof & Congruence, Conditions of Similarity, Similarity: Missing Lengths, Similarity: Area, Similarity in 3D Solids **More Trigonometry** Accuracy (Bounds), Trigonometric Graphs, Area of Triangle & Sine Rule, Cosine Rule & 2D Problems, Solving Problems in 3D, Transforming Trigonometric Graphs	**Further Statistics** Sampling, Cumulative Frequency, Boxplots, Histograms, Comparing & Describing Populations	**Equations & Graphs** Simultaneous Equations Graphically, Inequalities Graphically, Graphs of Quadratic & Cubic Functions, Quadratic & Cubic Equations Graphically, Iteration, Quadratic Inequalities **Circle Theorems** Radii & Chords, Tangents, Angles in Circles, Applying Circle Theorems	**More Algebra** Rearranging Difficult Formulae, Algebraic Fractions, Simplifying Algebraic Fractions, Surds, Solving Algebraic Fraction Equations, Functions, Algebraic Proof
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Year 11 H	**Vectors & Geometric Proof** Vectors & Vector Notation, Vector Arithmetic, Parallel Vectors & Collinear Points, Geometric Problems						**Proportion & Graphs** Direct & Inverse Proportion, Exponential Functions, Non-Linear Graphs (Gradients of Tangents & Chords and Area Under a Graph), Translating, Reflecting & Stretching Graphs					**Bespoke sequence of lessons based on needs of the class**					**Bespoke sequence of lessons based on needs of the class**					**Bespoke sequence of lessons based on needs of the class**					**Bespoke sequence of lessons based on needs of the class**				
	SK																														
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