

Our Maths Curriculum

Ark St Alban's Academy

Our Approach

Maths is the universal language which connects real-world phenomena to numerical properties; maths models real life and gives pupils the skills to problem solve and think critically. It takes pupils from the numerical to the general, and from the concrete to the abstract. In studying maths at Ark St Alban's pupils will be able to specialise and generalise, and work systematically, to generate their own examples, to classify and to make conjectures. Our maths curriculum is cumulative and prioritises depth over breadth: each school year begins with a focus on concepts and skills that are common across different areas of maths. Pupils then have opportunities to apply their learning and make connections throughout the school year to enable them to consolidate their learning.

Subject Leader:

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Curriculum Map

KS3	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	What are the most important mathematical functions to help me succeed at secondary school?	What generalisations can we make about the number system?	How can algebra help us solve problems?	How can we identify and construct angles and triangles?	How does the co-ordinate system work? How to work out area/perimeters of 2D shapes?	How can transformation be done on 2D shapes? What generalisations we can make about factors and fractions?
Year 8	How can algebra, inequalities and sequences be used to solve problems?	How can we identify and represent linear equations on graphs? How can we use estimation? How can use ratios to solve problems?	How interpret and plot real life graphs? How does direct/inverse proportion work?	How to interpret and use different sets of data?	How to find angles/bearings from a given problem?	What different physical properties of 2D and 3D can we measure?
Year 9	How can we represent different sets of data and find probabilities from it?	How do simultaneous equations work (algebraically and graphically)?	How can we construct 2D shapes from a given set of instructions? What properties do right angles triangles have? What different/ shared properties to similar and congruent shapes have?	How does trigonometry play a part in properties of a right-angled triangle?	How does complex algebra helps us solve problems? What are the properties of Surds?	What are the laws of indices? How can standard form help with operations on very large/very small numbers?

KS4	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10	<p>What are the unique properties of the integers?</p> <p>How do we manipulate algebraic expressions?</p> <p>How do we calculate and reason using fractions?</p> <p>How do we apply scaling strategies to ratios?</p>	<p>How can proportional reasoning be applied to worded and algebraic problems?</p> <p>How are one and two step equations, inequalities and formulae solved using algebraic techniques?</p> <p>How do we create and plot quadratic and distance-time graphs?</p> <p>How can we calculate the probabilities of any event ?</p>	<p>How can decimal accuracy be used to solve problems?</p> <p>What are the laws of indices and how can they be manipulated?</p> <p>How can Standard Form be converted and manipulated?</p> <p>How can triangles be recognised and constructed when given a criteria?</p> <p>How can Pythagoras' Theorem be applied to calculate missing sides in a right-angled triangle?</p> <p>How can Trigonometry laws be recognised and applied to right-angled triangles?</p>	<p>How can sequences be constructed and continued when given a criteria, including how to find any term in a given sequence ("Nth term")</p> <p>How can missing values be found from a table, and used to plot and construct linear graphs?</p> <p>How can different types of data be identified and used to construct pictograms, bar charts, pie charts and scatter graphs.</p>	<p>How can percentages of an amount be calculated, including percentage increases/ decreases?</p> <p>How do conversions between Fractions, Decimals and Percentages work?</p> <p>How are conversions between metric units calculated (length, mass, volume)?</p> <p>How can polygons be recognised, and their characteristics known in order to calculate missing angles (both internal and external)?</p>	<p>How can areas of triangles and quadrilaterals (including rectangles, parallelograms and trapezium) be calculated?</p> <p>How can the area and perimeter of compound shapes be calculated?</p> <p>How can transformations be constructed and recognised, including reflection, rotation, enlargement and translation?</p> <p>How are vectors, involving both addition, subtraction and multiplication drawn and described?</p> <p>How perpendicular lines/bisector and locus calculated?</p>
Year 11	<p>What are the unique properties of the integers, and how do we use that knowledge to answer multi-step questions?</p> <p>How do we manipulate algebraic expressions, including expanding and simplifying (both linear and quadratics)?</p> <p>How do we calculate with mixed numbers and use fractional reasoning with word problems?</p> <p>How do we apply fractional and algebraic strategies to ratios?</p>	<p>How do we apply proportional reasoning to worded and algebraic problems?</p> <p>How do we solve multi-step linear equations, inequalities and formulae using algebraic techniques?</p> <p>How do we create and apply formulae to solve problems?</p> <p>How do we create and plot cubic, reciprocal and velocity - time graphs?</p> <p>How do we calculate the probability of mutually exclusive and independent events within frequency trees, Venn diagrams and tree diagrams?</p>	<p>How do we use decimals in multi-step problems and find the limits of accuracy?</p> <p>How do we manipulate algebraic indices using negative and fractional powers?</p> <p>How can the four operations be applied to Standard Form?</p> <p>How do we satisfy the criteria of triangle construction?</p> <p>How do we apply Pythagoras' Theorem to solve 2D problems?</p> <p>How do we apply Trigonometry to solve 2D problems?</p>	<p>How do we construct and continue sequences when given a criteria, including how to find any term in a given sequence ("Nth term")?</p> <p>How do we identify different types of data?</p> <p>How do we interpret and construct pictograms, bar charts, pie chart and scatter graphs?</p>		

