



Maths

Subject intent:

Mathematicians at JCA are encouraged to be adventurous, independent, and aspirational. We celebrate resilience and students thrive from making links and connections between different areas of the curriculum. Mistakes are openly discussed, and misconceptions are exposed through the use of informal low stakes multiple choice quizzing. This provides students with a stable platform to then explore topics with curiosity and engagement. Staff provide students with opportunities to explore and predict outcomes through carefully chosen well sequenced, well scaffolded linked problems. Tasks are taught with depth, forcing students to reason and evaluate their thinking. Any opportunity to interleave other strands of mathematics from other areas of the curriculum are utilised.

We help students to become the best mathematicians they can be. When students leave JCA, they have a mathematical tool kit which they take with them into further education, apprenticeships, and employment.

Brief overview of thinking behind KS3 cumulation and progression of knowledge:

The Maths KS3 curriculum builds on core concepts from KS2, with teachers and learners having clarity on what they have already learnt, what they are learning now, and where they are heading in the future. We have a spiral curriculum, but with emphasis on providing time and space, especially in Y7, for topics to be explored with depth of knowledge and understanding prioritised over speed and surface level learning. Students will explore mathematical structures that will build into KS4, as well as key models which will aid conceptual understanding over time.

Link to KS4 specification:

<https://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300>

<https://filestore.aqa.org.uk/resources/mathematics/specifications/AQA-8300-SP-2015.PDF>

<https://www.aqa.org.uk/subjects/mathematics/aqa-certificate/further-mathematics-8365>

<https://filestore.aqa.org.uk/resources/mathematics/specifications/AQA-8365-SP-2018.PDF>

Maths curriculum plan:

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 11 (First teaching Sept 2022)	H Algebra: Solving Completing the square Iteration Further sim equations Geometry 3D trig Non right angled	H Algebra: Graphing Composites, inverse functions Transformations of graphs Rates of change Area under curve Graphs of trig functions Formal mocks	Revision through reasoning and problem-solving: Multiplicative Best buys, bank accounts, ratio with everything Geometric Reasoning with angle Shape problems – add/spilt Multi-step problems Algebraic Evaluation of others work Proof Within this focus - class level planning responsive to mock analysis	Formal mocks Class level planning responsive to mock analysis, overseen and supported by maths subject leaders	Final exams Class level planning responsive to mock analysis, overseen and supported by maths subject leaders	Final exams
Year 10 (First teaching Sept 2021)	F Algebra: Solving Simplifying, solving & rearranging, identities Solving quadratics Geometry Area & volume review Trig, exact values Vectors Area & sectors	F Algebra: Graphing Ratio, equations & graphs Plotting graphs Sketching inc cubic, reciprocal Inequalities – solve & shade Formal mocks	Combinations & prob Systematic listing Sample spaces Venn diagrams Product rule for counting Probability trees (non r) Geometry Circles Area, volume Volume/surface area	Algebra & Graphing Straight line graphs – algebra review Function notation Solving quadratics Real life graphs Sketching quadratics Perpendicular lines Equation of circle, tangent	Algebraic fractions Fractions review Algebraic fractions Complex rearranging Visualising Transformations Invariance Vectors, ops Proof using vectors	Formal mocks (July data entry) Displaying data Pie charts, all bar charts Frequency tables Cumulative frequency Histograms Polygons Angles review, polygons Circle theorems
Year 9 Assessment	DOYA – subject portfolio (January data entry)		DOYA subject portfolio + summative exam + academic/enrichment diploma – graduation (July data entry)			
Year 9 (First teaching Sept 2020) What knots are tied by the end of Year 9?	Working with number Rounding, estimation Error Intervals Standard form Indices Working algebraically Expanding & factorising Identities	Numerical reasoning Percentages Money Probability Finding probabilities Frequency trees Probability tree diagrams	Working with data Statistical measures Averages from freq tables Boxplots Geometric reasoning Angles in parallel lines Bearings Constructions & loci	Solving Solving equations Solving inequalities Simultaneous equations Sequences Linear nth term Fibonacci, quad & geom Quadratic nth term	Graphing Straight line graphs Graphical solutions, parallel lines Sketching graphs Rearranging Rearranging formulae Compound measures	Scaling Direct/inverse proportion Units Similarity Visualising Transformations Plans & elevations Surface area
Year 7 & 8 Assessment	1 MCQ	2 MCQ + DOYA	3 MCQ	4 MCQ + DOYA		
Year 8 (First teaching Sept 2020)	Diving into data Angle Interpreting & comparing Averages Scatter graphs	Formalising algebra Solve equations Sequences (nth term) Graphs of linear functions, $y=mx+c$	Proportional relationships Percentages Convert between fractions, decimals & percentages Ratio – with linear functions & fractions Units of measure	Geometrical reasoning 3D shape Volume Angle, constructing triangles Pythagoras		
Year 7 (First teaching Sept 2020)	Fractional thinking Probability Factors, multiples, primes Fractions (+/-)	Algebraic thinking Directed number Manipulating algebra Exploring sequences	Proportional reasoning Fractions (\times , \div) Proportion Ratio Scale diagrams	Using Shape Coordinates & Introducing straight line graphs Properties of shape Notation/labelling conventions Perimeter & area Circles – area & circumference		