Maths

Key Stage 4 Curriculum Map

The Charter School North Dulwich

	Module One	Module Two	Module Three	Module Four	Module Five
Y10	**Topics: Number** **Key concepts:** • Estimating answers and limits of accuracy and calculating with bounds • calculation of error intervals • Multiplication and division with decimals • Powers, Roots, negative and fractional indices and manipulating surds • Operations with fractions and mixed numbers • Performing calculations with numbers in standard form	**Topics: Algebra** **Key concepts:** • Solving linear equations (including involving algebraic fractions) and inequalities and equations with the unknown in the denominator • Expanding and factorising (linear and quadratic expressions) including quadratic expressions involving difference of two squares • Solving quadratics algebraically and using graphs • Recognising graphs of functions • Simplifying algebraic fractions • Four operations with algebraic fractions • Algebraic proof and understanding	**Topics: Ratio and Proportion** **Key concepts:** • Working with percentages and repeated percentage change using multipliers • To solve problems involving reverse percentage • to use multipliers to solve problems involving compound interest (financial mathematics) • to understand the difference between simple and compound interest, and solve problems involving these • Working and problem solving with ratio to be able to divide amounts using ratio • merging ratio and subdivide ratio, to solve problems where the ratios have updated after changing amounts to form	**Topics: Geometry and Measure** **Key concepts:** • Congruence and similarity, Transformations • Angle geometry Review • Vectors and Vector Geometry • Circle Theorems • Area and perimeter (including compound shapes), Circles and sectors • Volume and surface area of 3D shapes including prisms, pyramids, cones, spheres, cylinders • Similarity in 3D shapes • Pythagoras' theorem and trigonometry in non-right-angled triangles • Exact Trigonometric Ratios • Bearings and scale drawings	**Topics: Probability and Statistics** **Key concepts:** • To find probabilities of independent and dependent combined events using tree diagrams and Venn diagrams • Probabilities of independent and mutually exclusive events • Theoretical and experimental probabilities and expected and relative frequencies, • Constructing sample space diagrams • Displaying data in Venn diagrams to calculate conditional probabilities • Calculating averages • To use two-way tables to solve probability problems (application and drawing without prompting

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		equivalence in algebraic expressions • Changing the subject of the formula (including when expanding and factorising are needed) • Equation of a straight line through two points, parallel and perpendicular lines, interpreting y-intercepts and gradients in real life scenarios • Solving simultaneous linear/ linear/quadratic equations • Plotting quadratic and cubic graphs and finding roots and y intercepts • Finding the nth term of quadratic sequences	equations from equality of ratios • To compare lengths, areas and volumes using ratio notation • make links to similarity (including trigonometric ratios) and scale factors, • To understand the gradient of a conversion graph as a rate of change, and the y-intercept as a fixed charge, to use a conversion graph to perform conversions outside the range of values in the graph • Understanding gradients as rates of change • To solve problems involving direct and inverse proportion • To form direct and inverse proportion equations from given pairs of values • To recognise and interpret graphs that illustrate	• compound measures	• To use two sets given in set notation to construct a Venn Diagram • To interpret a given Venn diagram to describe two sets in set notation • To interpret a given Venn diagram to describe two or more sets in set notation, including their union, intersection, and complement • To construct cumulative frequency tables • To draw cumulative frequency graphs • To construct and interpret frequency polygons • To use cumulative frequency graphs to estimate the median and the quartiles • To use cumulative frequency diagrams to interpret the data

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	Module One	Module Two	Module Three	Module Four	Module Five
			direct and inverse proportion, conversion between units and compound measure, including density and pressure • solving problems involving average density/ speed /pressure		• To find quartiles and IQR from cumulative frequency diagrams • To draw and interpret box plots
	Assessment: One-hour assessment	**Assessment:** Three one-hour cumulative assessments	**Assessment:** Two one-hour cumulative assessments	**Assessment:** Two one-hour cumulative assessments	**Assessment:** Full GCSE practice examination (3 papers)

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	Module One	Module Two	Module Three	Module Four	Module Five
Y11	**Topics: Number** **Key concepts:** • Estimating answers and limits of accuracy and calculating with bounds, calculation error intervals due to truncation or rounding, change freely between units • Multiplication and division with decimals • Powers • Apply index laws to negative and fractional indices and solve equations involving indices • Manipulating surds and numbers in standard form • Operations with fractions and mixed numbers • Prime Factor • Decomposition and using this to find HCF and LCM of two or more numbers,	**Topics: Algebra** **Key concepts:** • Solving linear and quadratic equations (including involving algebraic fractions) and linear and quadratic inequalities • Expanding and factorising (linear and quadratic expressions) including quadratic expressions involving difference of two squares • Solving quadratics algebraically and using graphs • Identifying roots and turning points of a quadratic graph • Finding turning points by completing the square • Plotting linear, quadratic, cubic and reciprocal graphs • Recognising graphs of functions, understand functions, inverse functions, and composite functions,	**Topics: Ratio and Proportion** **Key concepts:** • Working with percentage and reverse percentages and repeated percentage change • Problem solving with ratio • To compare lengths, areas and volumes using ratio notation; make links to similarity (including trigonometric ratios) and scale factors • Understanding gradients as rates of change, and areas under curves as representing distance in speed time graphs • Calculating instantaneous rates of change using tangents • Solving problems involving direct and inverse proportion	**Topics: Geometry and Measure** **Key concepts:** • Congruence and similarity Review • Transformations Review • Angle geometry Review • Vectors and Vector Geometry Review • Circle Theorems Review • Area and volume Review • Volumes of frustums, • 3D shapes • Pythagoras' theorem and trigonometry in non-right-angled triangles and area of a non-right-angled triangle • Problems involving compound measure	**Topics: Probability and Statistics** **Key concepts:** • To find probabilities using tree diagrams and Venn diagrams • Theoretical and experimental probabilities and expected and relative frequencies • To use cumulative frequency graphs and box plots • To use histograms to display continuous data, to calculate and estimate averages

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	Module One	Module Two	Module Three	Module Four	Module Five
	and to solve other problems • Apply systematic listing and counting strategies	and estimate roots using iteration • Transform graphs of functions • Algebraic proof and understanding equivalence in algebraic expressions • Changing the subject of the formula (including when expanding and factorising are needed) • Equation of a straight line and finding parallel and perpendicular lines, interpreting y-intercepts and gradients in real life scenarios • Solving simultaneous linear/ linear/quadratic equations • Finding the nth term of quadratic sequences, recognise and use the equation of the circle, centred at the origin	• To recognise and interpret graphs that illustrate direct and inverse proportion, conversion between units and compound measure, including density and pressure, solving problems involving average density/speed/pressure		
	Assessment: One-hour Assessment	**Assessment:** Three one-hour cumulative assessments	**Assessment:** Full GCSE Practice Exam	**Assessment**: Two one-hour cumulative assessments	