

<b>Long Term Departmental Planning Overview</b>	Subject: <b>Mathematics</b>
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**Intention**

KS3: To embed a deep understanding of the basic skills across the five areas of Maths in preparation for applying them to GCSE questions and across the wider whole school curriculum and in real life.

KS4: To develop the specific skills and knowledge to apply to problems ensuring that they reach their maximum potential at GCSE and are suitably equipped for further education, careers and everyday life.

KS5: Students should have the mathematical knowledge and skill set to confidently apply them in further education and in the workplace.

Year	Curriculum Title	HT1 topics	HT2 topics	HT3 topics	HT4 topics	HT5 topics	HT6 topics
7	<b>Number</b>  <b>Ratio and proportion</b>	<b><u>Understanding Numbers</u></b> Ordering and place value. Calculating with fractions. Rounding and estimating. Negative numbers.	<b><u>Multiply and Divide</u></b> Integers. By 10,100 and 1000. Decimals. Negatives. Fractions. Simplify fractions.	<b><u>Add and Subtract</u></b> Integers. Decimals. Negatives. Fractions. Collect like terms. Term-to-term sequences. Perimeters. Angles sum.	<b><u>Operations and special numbers</u></b> Order of operations. Multiples and Factors. Primes. Powers and roots. Standard form.	<b><u>Fractions</u></b> Order fractions Fractions of amount. Problem solving <b><u>Percentages</u></b> Percentage of amount. Percentage change. Reverse percentages. Financial problems. Fraction, Decimal and percentage conversion	<b><u>Ratio and Proportion</u></b> Compound measures. Use and convert metric measures. Scale factors and maps. Simplify and divide by a ratio. Proportion problem solving eg; conversion, scaling, mixing etc

8	<p><b>Algebra</b></p> <p><b>Ratio and proportion</b></p> <p><b>Numeracy revision</b></p>	<p><b><u>Numeracy revision</u></b>          Multiply integers and decimals.          4 operations negative numbers.          HCF and LCM  <b><u>Expressions, formulae and identities</u></b>          Identify different types of algebra.          Collect like terms.          Expand and factorise brackets.          Expand binomials.          Index laws</p> <p><b><u>Stretch and challenge</u></b>          Simplify surds          Simplify algebraic fractions.          Factorise quadratics.</p>	<p><b><u>Numeracy revision</u></b>          Prime factorisation.          Compound measures.  <b><u>Sequences</u></b>          Mapping.          Nth rule.          Special sequences.          Recognise quadratic sequences.  <b><u>Substitution</u></b>          Substitute into expressions.          Pythagoras theorem.</p> <p><b><u>Stretch and challenge</u></b>          Inverse and composite functions.</p>	<p><b><u>Solve</u></b>          Solve linear equations with x on one side and on both sides,          Construct and solve equations in problems.          Change the subject of a formula.</p> <p><b><u>Stretch and challenge</u></b>          Solve quadratic equations with factorising and the quadratic formula.</p>	<p><b><u>Ratio and proportion</u></b>          Simplify and divide by a ratio.          Ratio to fractions and linear functions.          Proportion problem solving eg; conversion, scaling, mixing etc  <b><u>Percentages</u></b>          Percentage of amount.          Percentage change.          Reverse percentages.          Financial problems.</p>	<p><b><u>Coordinates and Graphs</u></b>          Plot coordinates in all 4 quadrants.          Plot straight line graphs.          Understand gradients and intercepts including parallel and perpendicular lines.          Interpret simple real life graphs</p> <p><b><u>Stretch and challenge</u></b>          Plot quadratic graphs and use to solve and find turning point.          Interpret real-life graphs. Including distance, speed and acceleration.</p>	<p><b><u>Inequalities</u></b>          Understand what an inequality is.          Plot on a number line.          Solve an inequality equation.</p> <p><b><u>Stretch and challenge</u></b>          Algebraic proof</p>
9	<p><b>Statistics</b></p> <p><b>Geometry</b></p> <p><b>Ratio and proportion</b></p> <p><b>Numeracy revision</b></p>	<p><b><u>Numeracy revision</u></b>          Multiply integers and decimals.          Round to significant figures.  <b><u>Percentages</u></b>          Percentage of amount.</p>	<p><b><u>Draw and analysis tables, charts and graphs</u></b>          Two way tables.          Pictograms.          Line graphs.          Bar charts, including</p>	<p><b><u>Numeracy revision</u></b>          Multiply integers, decimals and fractions.  <b><u>Theoretical probability</u></b>          Use correct probability terms.</p>	<p><b><u>Geometry</u></b>          Geometrical terms.          Draw and describe 2d shapes, using the correct property descriptions and notation. As well</p>	<p><b><u>Numeracy revision</u></b>          4 operations of integers, decimals and fractions/  <b><u>Algebra-expressions</u></b>          Substitute          Collect like terms</p>	<p><b><u>Angles</u></b>          Sum at a point, straight line, triangle and quadrilateral.          Angles in parallel lines.          Interior and exterior angles in</p>

		<p>Percentage change. Reverse percentages.</p> <p><u>Stretch and challenge</u> Financial problems. <b>Statistics</b> Collecting data and sampling. Types of data Averages including from a table.</p> <p><u>Stretch and challenge</u> Quartiles and interquartile range.</p>	<p>comparative and composite. Pie charts. Time series. Scatter graphs. <u>Stretch and challenge</u> Cumulative frequency. Histograms. Box plots.</p>	<p>Use the probability scale 0-1. Understand mutually exclusive events equal 1. <b>Experimental probability</b> Record frequency of outcomes. Analysis probability of experiments using tables and frequency trees. Calculate expected outcomes. <b>Sets and diagrams</b> Use tables, grids and Venn diagrams to organise data. Sample space diagrams. Tree diagrams of independent combined events.</p> <p><u>Stretch and challenge</u> Use tree diagrams, two way tables and Venn diagrams independent and dependent</p>	<p>as parts of a circle. Transformations. Co-ordinates problem solving. Properties of 3d shapes including nets. Plans and elevations. Pythagoras.</p> <p><u>Stretch and challenge</u> Describe transformations. Congruency and similarity. Vector calculations diagrammatic and column representations. <b>Algebra- solve</b> Construct and solve linear equations.</p> <p><u>Stretch and challenge</u> Construct and solve with an unknown of both sides.</p>	<p><b>Area and perimeter</b> 2 d shapes. Compound shapes. Circles. Surface area and volume of a cuboid.</p> <p><u>Stretch and challenge</u> Length of arcs. Areas of sectors Surface area and volume of prisms, pyramids, spheres and cylinders. Including problem solving.</p>	<p>a regular polygon. Sum of interior angles. Bearings <u>Stretch and challenge</u> Congruent triangles and proofs. Construction and loci.</p>
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				events as well as conditional probabilities.			
10 – foundation tier	<b>AQA</b>	<p><b><u>Number</u></b> Ordering and place value. Rounding and estimating. 4 operations including negative numbers. Calculations and problem solving with fractions and decimals. Order and inverse operations. Factors, multiples and primes, including HCF, LCM and prime factorisation. <b><u>Algebra – types, simplify and graphs</u></b> Identify different types of algebra. Collect like terms. Expand and factorise brackets. Index laws Substitution. Plot straight line graphs.</p>	<p><b><u>Number</u></b> Powers and roots. Standard form. <b><u>Ratio and proportion - Percentages</u></b> Percentage of amount. Percentage change. Reverse percentages. Financial problems. Compare fractions, decimals and percentages. Interpret growth and decay. <b><u>Algebra - Sequences</u></b> Nth rule. Special sequences. Recognise quadratic and geometric sequences. <b><u>Statistics</u></b> Types of data, collecting data and sampling. <b><u>Draw and analysis tables.</u></b></p>	<p><b><u>Ratio and Proportion</u></b> Use and convert metric measures. Scale factors and maps. Including length, area and volume. Compound measures. Simplify and divide by a ratio. Ratio to fractions and linear functions. Proportion problem solving eg; conversion, scaling, mixing etc <b><u>Algebra – expressions, graphs, solving and inequalities</u></b> Change the subject. Mapping Recognise, sketch and interpret linear, quadratic, cubic, reciprocal and real life graphs. Solve linear equations and inequalities.</p>	<p><b><u>Statistics</u></b> Find and compare averages including from a table. <b><u>Theoretical probability</u></b> Use correct probability terms. Use the probability scale 0-1. Understand mutually exclusive events equal 1. <b><u>Experimental probability</u></b> Record frequency of outcomes. Analysis probability of experiments using tables and frequency trees. Calculate expected outcomes. <b><u>Sets and diagrams</u></b> Use tables, grids and Venn diagrams to organise data.</p>	<p><b><u>Geometry Shape properties</u></b> Geometrical terms. Draw and describe 2d shapes, using the correct property descriptions and notation. As well as parts of a circle. Transformations. Co-ordinates problem solving. Properties of 3d shapes including nets. Plans and elevations. <b><u>Angles</u></b> Sum at a point, straight line, triangle and quadrilateral. Angles in parallel lines. Interior and exterior angles in a regular polygon. Sum of interior angles. Bearings</p>	<p><b><u>Geometry</u></b> Transformations. Perimeter and area of 2d shapes including a circle and parts of a circle. Surface area of a cube &amp; cuboid.</p>

		Understand gradients and intercepts including parallel and perpendicular lines.	<b><u>charts and graphs</u></b> Two way tables. Pictograms. Line graphs. Bar charts, including comparative and composite. Pie charts. Time series. Scatter graphs.	Represent an inequality on a number line.	Sample space diagrams. Use tree diagrams, two way tables and Venn diagrams from independent and dependent events as well as conditional probabilities.		
10 – higher tier	<b>AQA</b>	<b><u>Number</u></b> Ordering and 4 operations of fractions. Rounding and estimating. Bounds and error intervals. Product rule for counting. 4 operations including negative numbers. Calculations and problem solving with fractions and decimals. Converting recurring decimals. Order and inverse operations. Factors, multiples and primes, including HCF, LCM and	<b><u>Number</u></b> Powers and roots. Fractional indices. Standard form. <b><u>Ratio and proportion - Percentages</u></b> Percentage of amount. Percentage change. Reverse percentages. Financial problems. Compare fractions, decimals and percentages. Interpret growth and decay. <b><u>Statistics</u></b> Types of data, collecting data and sampling.	<b><u>Ratio and Proportion</u></b> Use and convert metric measures. Scale factors and maps. Including length, area and volume. Compound measures. Simplify and divide by a ratio. Ratio to fractions and linear functions. Proportion problem solving eg; conversion, scaling, mixing etc Direct and inverse proportion. <b><u>Algebra – expressions, graphs, solving and inequalities</u></b>	<b><u>Number</u></b> Simplify surds and rationalise the denominator. <b><u>Statistics</u></b> Calculate and compare averages including from a table. Quartiles and interquartile range. Box plots and cumulative frequency. <b><u>Theoretical probability</u></b> Use correct probability terms. Use the probability scale 0-1. Understand mutually exclusive events equal 1.	<b><u>Algebra - Expressions</u></b> Expand and factorise binomials, including the difference of two squares. Construct algebraic proofs. Inverse and composite functions. <b><u>Graphs</u></b> Recognise, sketch and interpret linear, quadratic, cubic, reciprocal, and exponential graphs. Equation of a circle and tangent to a circle. <b><u>Solving</u></b> Solve quadratics. Iterative process.	<b><u>Algebra – Solving</u></b> Solve simultaneous equations algebraically and graphically, including quadratics. <b><u>Geometry</u></b> Pythagoras. Trigonometry of right angled triangles. 2D and 3D Know the exact values of sin, cos and tan. Sine rule. Cosine rule. ½ absinc. Bearings.

11 – foundation tier	<b>AQA</b>	<p>prime factorisation.</p> <p><b><u>Algebra – types, simplify and graphs</u></b></p> <p>Identify different types of algebra. Collect like terms. Expand and factorise brackets. Index laws Substitution. Plot straight line graphs. Understand gradients and intercepts including parallel and perpendicular lines.</p>	<p><b><u>Draw and analysis tables, charts and graphs</u></b></p> <p>Two way tables. Pictograms. Line graphs. Bar charts, including comparative and composite. Pie charts. Time series. Scatter graphs. Histograms.</p>	<p>Change the subject. Construct and solve linear equations and inequalities. Represent an inequality on a number line. Solve inequalities with 2 variables including set notation and on a graph. Calculate with Surds.</p>	<p><b><u>Experimental probability</u></b></p> <p>Record frequency of outcomes. Analysis probability of experiments using tables and frequency trees. Calculate expected outcomes.</p> <p><b><u>Sets and diagrams</u></b></p> <p>Use tables, grids and Venn diagrams to organise data. Sample space diagrams. Use tree diagrams, two way tables and Venn diagrams from independent and dependent events as well as conditional probabilities.</p> <p><b><u>Geometry – circles</u></b></p> <p>Understand parts of a circle. Use and Proof Circle theorems.</p>	<p><b><u>inequalities</u></b></p> <p>Solve inequalities. Represent an inequality on a number line, using set notation and on a graph.</p> <p><b><u>Geometry – transformations and Vectors</u></b></p> <p>Draw and describe single and connected transformations including negative and fractional enlargements. Calculate vectors and use a Scaler vectors. Including proofs.</p>	
	<b>AQA</b>	<p><b><u>Expressions</u></b></p> <p>Expand and factorise binomials, including the</p>	<p>Revision for November mock</p>	<p>Topics covered based on RAG analysis of the first mock.</p>	<p>Topics covered based on RAG analysis of the first mock.</p>	<p>Topics covered based on RAG analysis of the second mock.</p>	<p><b>GCSE Paper1 non-calculator Paper 2 and Paper 3</b></p>

		<p>difference of two squares.  <b>Geometry</b>          Congruency proof          Volume of a cuboid          Volume and surface area of a cylinder, prism, pyramid and sphere.          Area of composite shapes, including circles and problem solving.          Pythagoras.          Trigonometry in right angle triangles.</p>					<p><b>calculator allowed.</b></p>
<p>11 – higher tier</p>		<p><b><u>Proportion and rates of change</u></b>          Interpret gradients and curves as a rate of change and proportional relationship.  <b><u>Algebra - graphs</u></b>          Draw and interpret real life graphs. Include velocity and acceleration.  <b><u>Geometry</u></b>          Congruency and properties of 2d shapes.</p>	<p><b><u>Algebra</u></b>          Simplify algebraic fractions.          Sketch and transform trigonometry and quadratic foundations.  <b><u>Geometry</u></b>          Congruency and similarity of length area and volume.          Sum at a point, straight line, triangle and quadrilateral.</p>	<p>Topics covered based on RAG analysis of the first mock.</p>	<p>Topics covered based on RAG analysis of the first mock.</p>	<p>Topics covered based on RAG analysis of the second mock.</p>	<p><b>GCSE Paper1 non-calculator Paper 2 and Paper 3 calculator allowed.</b></p>

		Perimeter and area of 2d shapes including circles and parts of a circle as well as composite shapes. Volume and surface area of cuboids, prisms, pyramids and spheres.	Angles in parallel lines. Interior and exterior angles in a regular polygon. Sum of interior angles. Constructions. Loci.				
Y12 – Core maths	<b>AQA</b> – option 2A	Representations and comparisons of data using various methods	Finance: Tax, National Insurance, Student Loans, Mortgages, Inflation, AER, APR, Exchange Rates Fermi Estimation	Critical Analysis and Normal Distribution.	Confidence Intervals, Correlation and Regression.	Revision and Examination	
Y12 – A-level	<b>AQA</b>	<b>Pure</b> Algebra Polynomials and binomial theorem Trigonometry	<b>Pure</b> Differentiation Exponentials and logarithms	<b>Mechanics</b> Vectors Units and kinematics <b>Statistics</b> Collecting, representing and interpreting data	<b>Mechanics</b> Forces and Newton’s law <b>Statistics</b> Probability and discrete random variables Hypothesis testing	Revision and examination	<b>Pure</b> Algebra Sequences
Y13 – A-level		<b>Pure</b> Trigonometry Differentiation	<b>Pure</b> Integration and differential equations Numerical methods	<b>Mechanics</b> Motion in two dimensions <b>Statistics</b> Probability and continuous random variables	<b>Mechanics</b> Forces <b>Statistics</b> Hypothesis testing	Revision and Examination	