

# KS3 Maths Curriculum Overview

<b>Implementation (Year 7)</b>	<b>Intent</b>	<p>Our aim is for all students to acquire a deep long-term, secure and adaptable understanding of mathematics regardless of starting point or background.</p> <p>A Lydiard Park learner:</p> <ul style="list-style-type: none"> <li>Will fluently and accurately recall, apply and explain facts and concepts using correct mathematical language.</li> <li>Will solve problems and reason mathematically by having a curiosity to explore conjectures, test hypotheses and generalise results.</li> <li>Through mastery, will develop confidence to use mathematics across curriculum areas and in the wider world.</li> </ul>					
	<b>Timeline</b>	<b>Term 1 - 7 Weeks</b>	<b>Term 2 - 7 Weeks</b>	<b>Term 3 - 7 Weeks</b>	<b>Term 4 - 6 Weeks</b>	<b>Term 5 - 5 Weeks</b>	<b>Term 6 - 6 Weeks</b>
	<b>Year 7 Overview</b>	<p>Students start by building on the number skills that they have developed in KS2. They explore these concepts to give them a firm understanding of the rules of number and extend this into algebraic expressions and equations. They are encouraged to make links between how number systems work and the rules we apply in algebra.</p> <p>Students move on to exploring 2D shapes. They practise their skills of measurement and construction using mathematical equipment and develop an understanding of the properties of 2D shapes. They look at how these shapes are transformed by reflection, rotation and translation as well as learning how to calculate the area of these shapes.</p> <p>Students return to number and proportional reasoning at the end of the year. They practise and extend their ability to work with fractions and make links between fractions, decimals and percentages. They also look at how to interpret ratio and solve problems using ratio.</p>					
	<b>SOW</b>	<b>Solving Problems, Calculations &amp; Percentages</b>	<b>Positive &amp; Negative Numbers Expressions &amp; Equations</b>	<b>Angles, Classifying 2D shapes &amp; Transformations</b>	<b>Construction, Coordinates &amp; Area of 2D shapes</b>	<b>Factor, Multiples &amp; Primes Fractions</b>	<b>Ratio Fractions, Decimals &amp; Percentages</b>
<b>Assessment Type &amp; Unit Focus</b>	<p>Baseline assessment given at beginning of course. Assessment by mid topic tickets and end of topic tests.</p> <p>Solving problems - how to apply mathematical thinking to real life problems. Searching for patterns and making conjectures.</p> <p>Calculations - apply written calculation methods, understand the importance of the order of precedence.</p> <p>Percentages - develop mental and calculator strategies for finding a percentage of an amount. Calculate percentage increase and decrease.</p>	<p>Assessment by mid topic tickets and end of topic tests.</p> <p>Positive &amp; Negative numbers - explore a variety of models and contexts to grasp why calculations should be carried out in a particular way.</p> <p>Expressions &amp; Equations - Recognise that algebra follows the same rules as number. Practise manipulating expressions and develop an understanding of how to solve equations.</p>	<p>Assessment by mid topic tickets and end of topic tests. Milestone assessment given to review pupil progress since baseline.</p> <p>Angles - Recall and practise skills of measuring angles. Develop an understanding of basic angles facts and extend this to angles in parallel lines.</p> <p>Classifying 2D shapes - Explore the properties of 2D shapes including symmetry. Apply properties to solving angle problems.</p> <p>Transformations - practise describing and drawing shapes after a translation, reflection, rotation &amp; enlargement.</p>	<p>Assessment by mid topic tickets and end of topic tests.</p> <p>Construction - using mathematical equipment to accurately draw 2D shapes.</p> <p>Coordinates - plot coordinates in 4 quadrants and use this to explore further properties of 2D shapes.</p> <p>Discover the equations of horizontal and vertical lines by looking at the shared properties of coordinates on the lines.</p> <p>Area of 2D shapes - recognise the formulae to find area of triangles, rectangles and parallelograms. Apply these formulae to more complex shapes.</p>	<p>Assessment by mid topic tickets and end of topic tests.</p> <p>Factors, Multiples &amp; Primes - explore properties of numbers including finding HCF and LCM.</p> <p>Fractions - explore equivalent fractions and make links with the work on factors and multiples. Apply this to calculating with fractions. Recognise that working with fractions can be more accurate and easier than using decimals.</p>	<p>Assessment by mid topic tickets and end of topic tests. Milestone assessment given to review pupil progress</p> <p>Ratio - Understand the links between ratios and fractions. Recognise that ratio can show unequal shares. Manipulate ratios to find equivalent ratios and share in a ratio.</p> <p>Fractions, Decimals &amp; Percentages - Recognise the equivalence between fractions, decimals and percentages. Calculate fractions and percentages of amounts using equivalence where appropriate.</p>	

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## Implementation (Year 8)

<p><b>Year 8 Overview</b></p>	<p>Students spend the first part of the year developing further their skills with algebra including drawing and identifying graphs. They focus on ratio &amp; proportion as well as recalling the use of fractions and percentages to solve real life questions. They are introduced to analysis of data including calculating averages and using scatter graphs. In the summer terms students explore further geometry topics that were introduced in year 7. They recall calculating area and extend this to include circles. They explore volume and surface area of 3D shapes. They also revisit angles and learn about bearing.</p>					
<p><b>SOW</b></p>	<p><b>Sequences, Equations &amp; Inequalities</b></p>	<p><b>Linear graphs &amp; Estimation</b></p>	<p><b>Ratio &amp; Proportion Fractions &amp; Percentages</b></p>	<p><b>Univariate &amp; Bivariate Data Working with decimals</b></p>	<p><b>Angles in polygons, parallel lines &amp; bearings</b></p>	<p><b>Area, Surface area &amp; Volume</b></p>
<p><b>Assessment Type &amp; Unit Focus</b></p>	<p>Assessment by mid topic tickets and end of topic tests. Sequences - Identifying sequences and finding the nth term rule. Applying the nth term to solving problems. Forming &amp; Solving equations - Use the balance method to solve linear equations. Write equations from information given in words or diagrams. Inequalities - recognise inequalities and represent them on a number line. Solve inequalities and be able to interpret the solutions.</p>	<p>Assessment by mid topic tickets and end of topic tests. Milestone assessment given to review pupil progress. Linear graphs - Recall plotting coordinates and recognise how to generate points from the equation of a line. Explore links with gradient, the y-intercept and the equation of a line. Read information from linear graphs and interpret it.</p>	<p>Assessment by mid topic tickets and end of topic tests. Ratio &amp; Proportion - understand and use ratio notation. Solve a range of problems involving ratio including sharing in a ratio. Solve problems using direct proportion including finding best value. Fractions &amp; Percentages - Calculate a fraction and percentage of an amount. Use decimal multipliers to find percentage increases and decreases.</p>	<p>Assessment by mid topic tickets and end of topic tests. Milestone assessment given to review pupil progress. Univariate data - Construct and interpret charts and graphs. Calculate averages and use them to compare distributions. Bivariate data - Plot scatter graphs, be able to describe the relationship shown and use the line of best fit to predict further results. Decimals - Calculate accurately with decimals by using knowledge of place value.</p>	<p>Assessment by mid topic tickets and end of topic tests. Angles in polygons - Calculate interior and exterior angles in polygons. Apply this to find missing angles.. Parallel lines - identify corresponding and alternate angles in parallel lines. Use this to solve more complex angle problems. Bearings - Understand the conventions of bearings. Recognise how they link with parallel lines and how you can use this to calculate the return bearing.</p>	<p>Assessment by mid topic tickets and end of topic tests. Milestone assessment given to review pupil progress. Area - Calculate the area of rectangles, triangles, parallelograms, trapezia and circles. Calculate the circumference of circles. Volume - explore the volume of 3D shapes. Calculate the volume of cuboids and prisms. Surface area - recognise the nets of 3D shapes and be able to calculate the area of the net. Calculate surface area of cuboids.</p>

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<b>Implementation (Year 9)</b>	<b>Year 9 Overview</b>	Students are introduced to probability and make links with this and previous work on equivalence of fractions, decimals & percentages. They recall linear graphs and explore how to use them to solve simultaneous equations. They extend their understanding of linear equations to include algebraic methods for simultaneous equations. They recall construction and extend this to loci. They are introduced to Pythagoras's theorem and if appropriate trigonometry. They apply their understanding of proportion to similar shapes. Further work is done on repeated percentage change. They practise manipulating algebra and solve quadratic equations by factorising. Indices and Standard form are introduced to students and time is spent recalling area of 2D shapes.					
	<b>SOW</b>	Fraction, Decimals & percentages and Probability	Solving graphically & algebraically	Construction & Loci Pythagoras's theorem	Enlargement & Similarity Growth & Decay	Indices & Standard form Area of 2D shapes	Primes, factors & multiples Expressions & graphs
	<b>Assessment Type &amp; Unit Focus</b>	<p>Assessment by mid topic tickets and end of topic tests. Milestone assessment given to review pupil progress.</p> <p>Fractions, Decimals &amp; Percentages - Applying the ability to convert between FDP to be able to compare proportion.</p> <p>Probability - Define and calculate probability. List outcomes and calculate the probability of combined events. Use Venn diagrams to solve probability problems.</p>	<p>Assessment by mid topic tickets and end of topic tests.</p> <p>Solving graphically - Plot linear and quadratic graphs and use these graphs to solve equations. Recognise the properties of an equation of a line.</p> <p>Solving algebraically - solve linear equations using the balance method. Solve simultaneous equations formally and informally.</p>	<p>Assessment by mid topic tickets and end of topic tests. Milestone assessment given at beginning of term to review pupil progress.</p> <p>Construction &amp; Loci - Accurately construct 2D shapes and bisectors. Identify the locus of a point for a range of given conditions. Apply this to solve geometric problems. Recognise congruence in 2D shapes.</p> <p>Pythagoras's theorem - Discover Pythagoras's theorem and apply it to a range of contexts including 3D shapes.</p>	<p>Assessment by mid topic tickets and end of topic tests. Milestone assessment given to review pupil progress.</p> <p>Enlargement &amp; Similarity - Draw accurate enlargements of 2D shapes. Calculate missing dimensions of similar shapes using scale factor and constants of proportionality. Extend this to area and volume of 2D and 3D similar figures.</p>	<p>Assessment by mid topic tickets and end of topic tests. Milestone assessment given to decide KS4 tier.</p> <p>Indices &amp; Standard form - Use index notation and explore the laws of indices.</p> <p>Convert between standard and ordinary form for large and small numbers.</p> <p>Carry out calculations with standard form.</p> <p>Area of 2D shapes - Recall and use the properties of triangles and quadrilaterals.</p> <p>Calculate the area of triangles, rectangles, parallelograms, trapezia.</p> <p>Calculate the area and circumference of circles.</p> <p>Find the area of compound shapes.</p>	<p>Assessment by mid topic tickets and end of topic tests.</p> <p>Primes, factors &amp; Multiples - Recall factors, multiples and prime numbers. Find HCF and LCM of pairs or sets of numbers. Recognise how this is important for work with fractions and with expressions.</p> <p>Expressions - simplify expressions, expand and factorise single brackets. Expand double brackets and factorise quadratic expressions. Solve quadratic equations by factorising.</p> <p>Graphs - Recognise links between gradient &amp; y-intercept and the equation of a line. Find the equation of a line from 2 points. Explore links in the equations of parallel and perpendicular lines.</p>
	<b>Topic Texts</b>	Pupils read and analyse texts with the following heading - Saving lives with maths, Welcome to Hollywood, Fighting back against cancer, Who Invented Zero?, Using maths for dating, Money movement. Some of these texts link maths with careers and money. Others are general interest texts about the history of maths.					
	<b>Year Tracking</b>		KS3 RP1	KS3 RP2			KS3 RP3
	<b>Literacy and Numeracy links</b>	<p><b>Literacy</b> skills are developed through a focus on key words and precise language in maths. For each topic, key words are defined and recorded. Pupils then use them when talking and learning about a topic. Pupils are encouraged to talk about maths using precise language. Classes discuss the language seen in questions and what it means.</p> <p><b>Numeracy</b> skills are at the heart of most maths lessons. Review of written calculation is written into the scheme of work. During most topics, pupils will practise their skills at calculating without a calculator.</p>					
	<b>How It is Used / Skills Set Developed / Outcomes</b>	At KS3 pupils are starting to develop their use of formal mathematical knowledge to interpret and solve problems. They begin to model situations mathematically and express the results using a range of formal mathematical representations. In order to do this they learn to select appropriate concepts, methods and techniques to apply to problems.					
	<b>Links to KS4</b>	Topics covered at KS3 develop skills needed at KS4. A higher tier pupil will extend their learning in KS3 and explore more complex topics that link to topics covered at KS3. A foundation tier pupil will revisit & extend topics covered at KS3. They will examine in more depth topics they have met in previous years to secure their understanding of key topics.					
	<b>Careers in the Curriculum</b>	Careers that use maths are introduced to pupils through discussion in class and the use of starters that require pupils to decide why the maths topic they are learning is relevant to the careers shown. Each year group has the opportunity to attend a maths trip that shows how maths applies in real life settings.					