

LEVEL OF LEARNING THRESHOLD GRID Year 9

DEPARTMENT/SUBJECT: MATHEMATICS

Assessment area	Developing	Secure	Excellent
	Grades 1-3	Grades 4-6	Grades 7-9
Number Skills	<ul style="list-style-type: none"> Finding simple squares, cubes and roots Finding factors and multiples of numbers BIDMAS Multiplication and division by a number between 0 and 1 Multiplication and division by powers of 10 and decimals Convert numbers to and from standard form 	<ul style="list-style-type: none"> Finding the prime factor decomposition of a number (4) HCF and LCM (4) Solving cubic equations by trial and improvement (4) Using the rules of indices in numeric situations (4) Calculate with numbers in standard form (5) Understanding negative indices (6) Using the product rule for counting (6) 	<ul style="list-style-type: none"> Manipulating fractional indices (7) Calculating upper and lower bounds and error intervals Using bounds in calculations
Fractions, decimals and percentages	<ul style="list-style-type: none"> Ordering fractions, decimals and percentages (1/2) Calculating with fractions including mixed numbers (3) 	<ul style="list-style-type: none"> Convert between recurring decimals and exact fractions (6) 	<ul style="list-style-type: none"> Set up, solve and interpret the answers in growth and decay problems, including compound interest

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Ratio		<ul style="list-style-type: none"> • Methods for solving problems involving direct and indirect proportion 	
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Algebra	<ul style="list-style-type: none"> • Using a calculator, e.g. '1.5³' and 'square root of 23.78' • Calculating indices and roots, e.g. '4³', '2³ x 3²', 'the cube of 4' • Solving equations, including unknowns on both sides • Expanding brackets such as x(x+4) • Factorising, e.g. x² - 5x and 12x - 8 • Deriving and solving equations from diagrams • Simplifying simple algebra • Recognising number sequences • Finding terms in a linear sequence 	<ul style="list-style-type: none"> • Using the rules of indices in numeric situations • Solving inequalities by algebraic methods • Solving equations including involving fractions • Expanding brackets • Factorising expressions, e.g. 6(a-b)² - 3(a-b) • Solving simple quadratics by factorizing • Deriving and solving harder equations from diagrams • Finding the nth term for a linear sequence 	<ul style="list-style-type: none"> • Simplifying algebra involving powers • Manipulating fractional indices • Understanding negative indices • Rearranging complex equations • Solving algebraic problems • Factoring harder quadratics • Recognising the difference of two squares • Finding the nth term of a quadratic sequence
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<p>Shape and Space</p>	<ul style="list-style-type: none"> • Understanding the geometry of triangles and quadrilaterals • Solving problems involving parallel lines • Knowing triangle proofs (exterior angle & angle-sum) • Convert between units of measure • Identifying different symmetries • Solving problems involving similar triangles • Calculating area or circumference of a circle given radius 	<ul style="list-style-type: none"> • Solving problems involving polygons, e.g. interior angles • Understanding, using and solving problems with bearings • Finding interior and exterior angles of polygons • Use compound measure • Understanding similar and congruent shapes • Finding volumes of 3D shapes including prisms • Constructing the perpendicular bisector 	<ul style="list-style-type: none"> • Calculating upper and lower bounds and error intervals • Using bounds in calculations • Calculate arc lengths, angles and areas of sectors of circles • Surface area and volume of spheres, pyramids, cones and composite solids • Transform shapes using a combination of transformations and describe invariance of points.
	<ul style="list-style-type: none"> • Finding area of triangle, regular polygons, compound shapes • Constructing accurate drawings and angles • Constructing and interpreting plans and elevations • Nets of shapes 	<ul style="list-style-type: none"> • of a given line and angle bisector • Constructing loci • Understand and use scale drawings 	

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<p>Handling Data and Probability</p>	<ul style="list-style-type: none"> • Finding the modal class from grouped frequencies • Finding the mean from a discrete frequency distribution 	<ul style="list-style-type: none"> • Apply systematic listing strategies including use of the product rule for counting • Use Venn diagrams to solve problems and identify probabilities • Understand and use frequency trees • Finding mean and median from grouped data • Interpret and construct time series graphs 	<ul style="list-style-type: none"> <input type="checkbox"/> Use formal Set notation with Venn diagrams and probability
<p>Reasoning, interpreting and communicating mathematically</p>		<ul style="list-style-type: none"> <input type="checkbox"/> Analyse data to compare with theoretical results 	