



CURIOSITY

COMPASSION

COURAGE



Curriculum overview

Subject	Mathematics	Year group	11
Vision statement:	<p>At Landau Forte our curriculum exists to ensure all students regardless of background and ability have the opportunity to unlock their potential. We are committed to students being challenged from their previous key stage learning experiences. Our broad and balanced curriculum is ambitious, coherently planned and sequenced, and will provide the platform for preparing students with the foundations for examination success.</p> <p>Our Curriculum Intent has been informed by a wide variety of researchers and is steeped in evidence based research. Christine Counsell summarises the aspiration of our curriculum to empower all learners creating a pathway to success in university, their career and life:</p> <p><i>'A curriculum exists to change the pupil, to give the pupil new power. One acid test for a curriculum is whether it enables even lower attaining or disadvantaged pupils to clamber into the discourse and practices of educated people, so that they gain powers of the powerful.'</i></p> <p>As well as excellent academic success we aim to ensure our students leave us as polite and well-rounded young adults. Our new core values of Compassion, Courage and Curiosity are currently being embedded throughout our curriculum offer to ensure we continue to meet our social, emotional, spiritual and moral obligations.</p>		
Curriculum intent:	<p>All students acquire the mathematical life skills necessary for the world of work, no matter what their starting point is, catering for all abilities and backgrounds. We have a strong belief that all students can achieve in Maths.</p> <p>Students will be taught to have a firm understanding of number bonds and be confident in using non-calculator strategies for solving problems.</p> <p>Students will be stretched and challenged through problem solving tasks to develop resilience.</p> <p>Students are encouraged to show courage through attempting questions in environment where other students show compassion through a culture of being non-judgmental when questions are answered incorrectly. Students are also encouraged to show curiosity through asking questions and taking a genuine interest in the real life applications of the Maths that they are learning.</p> <p>This will be achieved by staff working together in planning lessons that allow ALL students to achieve/ exceed their potential through:</p> <ul style="list-style-type: none"> Common lesson planning formats; Expert knowledge of the subject; Differentiated material; Regular use of AfL to assess progress in a lesson; Regular use of formal marking and feedback; Regular summative assessments to ensure appropriate progress and intervention. 		
Threshold Concepts (TCs):	<p>TC1 Algebraic manipulation - This concept involves recognising mathematical properties and relationships using symbolic representation</p> <p>TC2 Number sense - This concept involves understanding the number system and how they are used in a wide variety of mathematical ways</p> <p>TC3 Shape facts - This concept involves recognising the names and properties of geometry shapes and angles.</p> <p>TC4 Multiplicative reasoning - This concept involves using ratio and proportion and understanding of reciprocals in real world applications</p> <p>TC5 Representing and interpreting data - This concept involves interpreting, manipulating and presenting data in various ways.</p> <p>TC6 Calculator skills - This concept involves fluent application of mathematical operations on a scientific calculator</p> <p>TC7 Understanding and calculating risk - This concept involves knowing the rules of probability in the correct context</p>		



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KS2 National Curriculum summary:

The curriculum ensures that all pupils around England get the essential knowledge they need to become educated citizens. So, it doesn't matter which school or area children are studying at - they will develop the same fundamental maths skills. Included in this frame of work are curriculum aims, which pupils need to meet at the end of each school year. Children who want to expand their knowledge even further will get the opportunity to do so. But essentially, they will all start from basics by learning about the key topic areas covered in the national curriculum for KS2 maths.

The eight main maths areas, which are included in the national curriculum for maths throughout KS2 are:

- Number - Number and Place Value
- Number - Addition and Subtraction
- Number - Multiplication and Division
- Number - Fractions
- Measurement
- Geometry - Properties of Shape
- Geometry - Position and Direction (not included in year 3)
- Statistics

As pupils get to year 6, they would have developed a deep understanding of these maths concepts. That's why two additional topic areas are introduced to the curriculum, which are:

- Ratio and Proportion
- Year 6 Algebra









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<p>Learner skills:</p>	<p>Critical thinking</p>  <p>CRITICAL THINKING</p>	<p>Organisation</p>  <p>ORGANISATION</p>	<p>Collaboration</p>  <p>COLLABORATION</p>	<p>Adaptability</p>  <p>ADAPTABILITY</p>	<p>Oracy</p>  <p>ORACY</p>	<p>Self-quizzing</p>  <p>SELF QUIZZING</p>
	<p>Targeting a grade 4 Term 1 and 2 Aug-Dec</p>	<p>Targeting a grade 5 and 6 Term 1 and 2 Aug-Dec</p>	<p>Targeting a grade 7-9 Term 1 and 2 Aug-Dec</p>	<p>Targeting a grade 4 Term 3 and 4 Jan-Apr</p>	<p>Targeting a grade 5 and 6 Term 3 and 4 Jan-Apr</p>	<p>Targeting a grade 7-9 Term 3 and 4 Jan-Apr</p>
<p>The Big Question</p>						
<p>Big picture questions:</p>						
<p>Content (Linked to TCs):</p>	<p>TC1 Algebraic manipulation TC2 Number sense TC3 Shape facts TC4 Multiplicative reasoning TC6 Calculator skills</p> <ul style="list-style-type: none"> Simplifying Expressions Substitution Solving linear equations Fractions, decimals and percentages Basic angle facts Properties of shapes Interior and exterior angles 	<p>TC1 Algebraic manipulation TC4 Multiplicative reasoning TC6 Calculator skills</p> <ul style="list-style-type: none"> Linear inequalities and number lines Solve quadratics by factorisation Reverse percentages Bearings Roots and indices Limits of accuracy Parallel lines Find the equation of a line Cubic and reciprocal graphs 	<p>TC1 Algebraic manipulation TC2 Number sense TC3 Shape facts TC4 Multiplicative reasoning TC6 Calculator skills</p> <ul style="list-style-type: none"> Completing the square Recurring decimals Circle theorems Fractional indices Upper and lower bounds Perpendicular lines Equations with proportion Gradients of curves 	<p>TC2 Number sense TC3 Shape facts TC4 Multiplicative reasoning TC5 Representing and interpreting data TC6 Calculator skills TC7 Understanding and calculating risk</p> <ul style="list-style-type: none"> Perimeter and Area of 2D shapes Volume and Surface area of prisms Finding average Charts and graphs Recognise correlation Laws of indices Linear sequences 	<p>TC1 Algebraic manipulation TC2 Number sense TC3 Shape facts TC5 Representing and interpreting data TC6 Calculator skills</p> <ul style="list-style-type: none"> Arc length and the area of a sector Volume of cones Plans and elevations Cumulative frequency and graphs Box plots Lines of best fit Quadratic sequences Factorise quadratics Use trig in 3D 	<p>TC1 Algebraic manipulation TC2 Number sense TC3 Shape facts TC4 Multiplicative reasoning TC5 Representing and interpreting data TC6 Calculator skills</p> <ul style="list-style-type: none"> Volumes of frustums Histograms Geometric sequences Complex changing the subject of a formula Use sine and cosine rules



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	<ul style="list-style-type: none"> • Four rules with integers and fractions • Rounding and estimation • Directed number arithmetic • Plot $y = mx + c$ • Interpret real life graphs • Plot quadratics • Simplify ratios • Share in a ratio • Direct proportion 	<ul style="list-style-type: none"> • Use fractions in ratios • Density and pressure) • Inverse proportion 		<ul style="list-style-type: none"> • Changing the subject of a formula • Find sides using Pythagoras • Find sides and angles using trig ratios • Single event probability • Listing outcomes • Calculate with percentages • Convert to/from standard form • Products of prime factors • Perform reflections, rotations, translations and positive enlargements • Construct triangles • Simultaneous linear equations • Read solutions from graphs • Add and subtract vectors • Find missing sides in similar shapes • Understand congruency 	<ul style="list-style-type: none"> • Tree diagrams – independent events • Compound interest • Growth and decay • Calculate with standard form • Negative and fractional enlargements • Identify and describe transformations • Constructs bisectors • Simultaneous equations, one linear, one quadratics • Multiply vectors by scalars • Solve complex similar triangles problems • Recognise congruent triangles 	<ul style="list-style-type: none"> • Find the area of triangles using $A = \frac{1}{2} ab \sin C$ • Dependent events • Conditional probability • Surds • Transform graphs • Loci • Quadratic inequalities • Iteration • Proof with vectors • Solve problems with similar area and volumes • Prove triangles are congruent
Key vocabulary:	Simplify, expression, substitute, solve, interior, exterior	Inequalities, solve, factorise, quadratic, bearings, parallel	Recurring, circle theorems, bounds, perpendicular, gradient	Perimeter, volume, surface area, average, indices, subject, formula, standard form, construct	Arc, sector, plan, elevation, cumulative frequency, box plot, quadratic sequence, vector, scalar,	Frustum, histogram, geometric sequence, sine, cosine, conditional probability, loci, transformation, proof



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Assessment:	Formative Assessment 1 (paper 1) Formative Assessment 2 (paper 2) PPE (3 papers) Formative Assessment 3 (paper 3)			Formative Assessment 1 (paper 1) Formative Assessment 2 (paper 2) PPE (3 Papers) Formative Assessment 3 (paper 3)		
Key/Historical misconceptions in this unit:	Adding fractions	Alternating and corresponding angles	Calculating gradient, finding the reciprocal	Clockwise and Anti clockwise.	Adding fractions on tree diagrams calculating different parts of boxplots.	Understanding the purpose of constructions
Sequencing:	We have chosen to sequence the year 11 curriculum like this because it reviews all of the GCSE topics required for their exams. Starting with core foundations of algebra which stretches through all topics. Then through the basic number work that is required in both the non-calculator and calculator papers. Students are then stretched through a range of topics that rely on these foundations to be strong.					
Values	<p>This scheme of work promotes the school values of Compassion, Curiosity and Courage by:</p> <p>Compassion - Students show compassion through a culture of being non-judgmental when questions are answered incorrectly.</p> <p>Curiosity - Students are encouraged to show curiosity through asking questions and taking a genuine interest in the real life applications of the Maths that they are learning.</p> <p>Courage - Students are encouraged to show courage through attempting questions</p>					
National Curriculum plus:	<p>In addition to teaching the statutory elements of the national curriculum, we also include opportunities to extend their learning beyond the classroom. For example practical examples and going further than the curriculum in terms of what they are expected to know from a financial literacy perspective.</p> <p>Preparation of students to take Level 2 further maths in support of achieving additional qualifications, higher grades in their normal GCSE maths and in preparation for A-level maths:</p> <ul style="list-style-type: none"> • Rationalisation of surds using difference of 2 squares • Domains and ranges of functions • Expanding triple brackets • Binomial expansion • Factor theorem • Advanced algebraic fractions • Sketching functions and interpreting graphs 					



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- Transformations of functions
- Trig identities
- Algebraic proof
- Limiting values of sequences and expressions
- Equations of circles not centred on the origin
- Differentiation
- Matrices
- Matrix transformations
- Geometric proof