



CURIOSITY

COMPASSION

Curriculum overview

COURAGE



| 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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| Learner skills: | Critical thinking  CRITICAL THINKING | Organisation  ORGANISATION | Collaboration  COLLABORATION | Adaptability  ADAPTABILITY | Oracy  ORACY | Self-quizzing  SELF QUIZZING |
| | Term 1 Aug-Oct | Term 2 Nov-Dec | Term 3 Jan-Feb | Term 4 Mar-Apr | Term 5 Apr-May | Term 6 Jun-Jul |
| The Big Question | | | | | | |
| Big picture questions: | <p>How can you use algebra to model problems?</p> <p>How can you move freely between fractions, decimals and percentages?</p> <p>What are the main angle facts?</p> <p>How can rounding affect real life situations?</p> | <p>How can we model real life situations using linear models?</p> <p>How are ratios used to show comparisons?</p> <p>What are the key formulae used with volume and surface area?</p> <p>How do you use a line of best fit?</p> | <p>What is a sequence?</p> <p>What's special about triangles?</p> <p>How can probabilities be used?</p> <p>What is a prime factor?</p> <p>How can you describe transformations?</p> | <p>How can you draw a triangle with a pair of compasses?</p> <p>What does the word simultaneous mean?</p> <p>How can vectors be used to show movement?</p> <p>What is meant by congruency?</p> | | |
| Content (Linked to TCs): | TC1 Algebraic manipulation TC2 Number sense TC3 Shape facts TC4 Multiplicative reasoning TC6 Calculator skills <ul style="list-style-type: none"> Simplifying Expressions | TC1 Algebraic manipulation TC4 Multiplicative reasoning TC6 Calculator skills <ul style="list-style-type: none"> Plot $y = mx + c$ Interpret real life graphs | TC1 Algebraic manipulation TC2 Number sense TC3 Shape facts TC4 Multiplicative reasoning TC6 Calculator skills <ul style="list-style-type: none"> Laws of indices Linear sequences | TC2 Number sense TC3 Shape facts TC4 Multiplicative reasoning TC5 Representing and interpreting data TC6 Calculator skills TC7 Understanding and calculating risk <ul style="list-style-type: none"> Construct triangles | Revision | Exams |



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| | <ul style="list-style-type: none"> • Substitution • Solving linear equations • Fractions, decimals and percentages • Basic angle facts • Properties of shapes • Interior and exterior angles • Four rules with integers and fractions • Rounding and estimation • Directed number arithmetic | <ul style="list-style-type: none"> • Plot quadratics • Simplify ratios • Share in a ratio • Direct proportion • Perimeter and Area of 2D shapes • Volume and Surface area of prisms • Finding average • Charts and graphs • Recognise correlation | <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 | <ul style="list-style-type: none"> • Simultaneous linear equations • Read solutions from graphs • Add and subtract vectors • Find missing sides in similar shapes • Understand congruency | | |
| Key vocabulary: | Simplify, expression, substitute, solve, interior, exterior | Perimeter, volume, surface area, average, indices, subject, formula, | Nth term, formula | Construct, simultaneous | | |
| 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) | | |



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| Key/Historical misconceptions in this unit: | Adding fractions Clockwise and Anti clockwise. | Joining quadratics with a straight line rather than a smooth curve | Describing a sequence of $n+2$ rather than $2n$ | Seeing vectors as fractions | | |
| 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 • Transformations of functions • Trig identities • Algebraic proof • Limiting values of sequences and expressions • Equations of circles not centred on the origin | | | | | |



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- Differentiation
- Matrices
- Matrix transformations
- Geometric proof