



CURIOSITY

COMPASSION

Curriculum overview

COURAGE



Subject	Mathematics	Year group	10
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

Learner skills:

Critical thinking

Organisation

Collaboration

Adaptability

Oracy

Self-quizzing



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CRITICAL THINKING



ORGANISATION



COLLABORATION



ADAPTABILITY



ORACY



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:

How do you carry out calculations with fractions and/or decimals?

How can you use algebra to model problems?

How can rounding affect real life situations?

How are ratios used to show comparisons?

What are the main angle facts?

How can you problem solve with area and perimeter?

What happens to shapes when they are transformed?

In what situations can linear graphs be plotted?

What are the key formulae used with volume and surface area?

What is the best average to use?

Can you think of any real life sequences you have seen?

How does solving linear inequalities differ to solving equations?

What's special about triangles?

In what situations would a scale drawing be useful?

Content (Linked to TCs):

TC1 Algebraic manipulation
TC2 Number sense

1. Decimals and Fractions

- Calculating with decimals
- Fractions and reciprocals
- Writing one quantity as a fraction of another
- Adding and subtracting fractions
- Multiplying and dividing fractions

TC2 Number sense
TC3 Shape facts
TC4 Multiplicative reasoning

4. Approximations

- Rounding whole numbers
- Rounding decimals
- Approximating calculations

5. Ratio, Speed and Proportion

- Ratio
- Best buys

TC1 Algebraic manipulation
TC3 Shape facts

7. Perimeter and Area

- Rectangles
- Compound shapes
- Area of a triangle
- Area of a parallelogram
- Area of a trapezium
- Circles
- The area of a circle
- Answers in terms of pi

8. Transformations

TC3 Shape facts
TC5 Representing and interpreting data
TC6 Calculator skills

10. Volumes and Surface Areas of Prisms & Curved Shapes and Pyramids

- 3D shapes
- Volume and surface area of a cuboid
- Volume and surface area of a prism
- Volume and surface area of cylinders
- Sectors
- Pyramids

TC1 Algebraic manipulation
TC2 Number sense
TC7 Understanding and calculating risk

12. Number and Sequences

- Patterns in number
- Number sequences
- Finding the nth term of a linear sequence
- Special sequences
- General rules from given patterns

13. Linear Inequalities

TC3 Shape facts
TC4 Multiplicative reasoning

15. Pythagoras' Theorem

- Pythagoras' theorem
- Calculating the length of the shorter side
- Applying Pythagoras' theorem in real-life situations
- Pythagoras' theorem and isosceles triangles



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			Summative Assessment 1 (Date)			Summative Assessment 2
Key/Historical misconceptions in this unit:	<ul style="list-style-type: none"> Negatives when expanding brackets 	<ul style="list-style-type: none"> Bearings must be 3 digits and always from North Failure to recognise rules of parallel lines can be applied to bearings 	<ul style="list-style-type: none"> Confusing perimeter and area Not recognising area scale factor and volume scale factor as powers of linear scale factor Use of negative scale factors Similar shapes have the same angles, regardless of linear scale factor Reverse percentage: Use of the original percentage to get back to starting amount 	<ul style="list-style-type: none"> Mean Vs median Vs 'average' 	<ul style="list-style-type: none"> Probabilities >1 Use of ratios for probabilities Knowing when to add and when to multiply probabilities 	<ul style="list-style-type: none"> When finding a shorter side or longer side using Pythagoras
Sequencing:	<p>We have chosen to sequence the year 10 curriculum like this because builds on and extends their previous knowledge and understanding. Students are now working towards higher or foundation pathways. Students are now regularly completing past exam questions to begin to prepare them for the end of their GCSE.</p> <p>For example - In year 7 they started with sequences which consolidated work previously done in primary school and formalised their understanding (Recognise linear and non-linear sequences) which was then extended by using algebraic notation (Generate sequences from an algebraic rule) in the following block. Algebra and sequences are revisited in year 8 during the spring term (Revise and extend Y7 coverage to include more complex rules) to further extend and embed understanding. This then moves towards working with conjectures in year 9 (Testing conjectures about sequences) and finding the nth term of a linear sequence. In year 10 students will revise and extend KS3 content, whilst higher students begin looking at sequences with surds and quadratic sequences in the summer term. In year 11 students consolidate and extend this knowledge to ensure they are fully prepared for their exams.</p>					



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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• Differentiation• Matrices• Matrix transformations• Geometric proof