



CURIOSITY

COMPASSION

Academic outline 2024-25

COURAGE



Mathematics

	Term 1 Aug-Oct	Term 2 Nov-Dec	Term 3 Jan-Feb	Term 4 Mar-Apr	Term 5 Apr-May	Term 6 Jun-Jul
Year 7:	Sequences Algebraic Notation Equality and Equivalence Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2	Place Value and Ordering Numbers FDP equivalence Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2	Solving Problems with Addition/Subtraction Solving Problems with Multiplication/Division Fractions and Percentages of Amounts Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2 Oak Academy link 3 Oak Academy link 4	Operations and Equations with Directed Numbers Addition and Subtraction of Fractions Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2	Constructing, Measuring and Using Geometric Notation Developing Geometric Reasoning Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2	Developing Number Sense Sets and Probability Prime Numbers and Proof Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2
Year 8:	Ratio and Scale Multiplicative Change Multiplying and dividing fractions Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2 Oak Academy link 3	Working in the Cartesian plane Representing data Tables and probability Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2 Oak Academy link 3	Brackets, equations and inequalities Sequences Indices Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2 Oak Academy link 3	Fractions and Percentages Standard Index Form Number Sense Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2 Oak Academy link 3	Angles in parallel lines and polygons Area of trapezia and circles Line symmetry and reflection Home Learning White Rose Maths Oak Academy link 1 Oak Academy link 2 Oak Academy link 3	The Data Handling Cycle Measures of Location Home Learning White Rose Maths Oak Academy Link 1



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<p>Year 9:</p>	<p>Straight line graphs</p> <p>Forming and solving equations</p> <p>Testing Conjectures Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3</p>	<p>Three-dimensional shapes</p> <p>Constructions and Congruency</p> <p>Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2</p>	<p>Numbers</p> <p>Using percentages</p> <p>Maths and Money Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3</p>	<p>Deduction</p> <p>Rotation and Translation</p> <p>Pythagoras</p> <p>Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3</p>	<p>Enlargement and Similarity</p> <p>Solving ratio and proportion problems</p> <p>Rates Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3</p>	<p>Probability</p> <p>Algebraic representation</p> <p>Revision</p> <p>Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2</p>
<p>Year 10 : GCSE HIGHER</p>	<p>Representing solutions of equations & inequalities</p> <p>Simultaneous Equation</p> <p>Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2</p>	<p>Congruence, similarity & enlargement</p> <p>Trigonometry Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3 Oak Academy link 4</p>	<p>Angles and Bearings</p> <p>Working with circles</p> <p>Vectors Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3 Oak Academy link 4</p>	<p>Ratios & Fractions</p> <p>Percentages & Interest</p> <p>Probability Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3</p>	<p>Delving into data</p> <p>Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2</p>	<p>Non-calculator methods</p> <p>Types of Number and sequences</p> <p>Indices & Roots</p> <p>Home Learning White Rose Maths</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3</p>
<p>Year 10: GCSE FOUNDATION</p>	<p>Decimals and Fractions</p> <p>Expressions and Formulae</p> <p>Linear Equations</p> <p>Oak Academy link 1 Oak Academy link 2</p>	<p>Approximations</p> <p>Ratio, Speed and Proportion</p> <p>Angles</p> <p>Oak Academy link 1 Oak Academy link 2</p>	<p>Perimeter and Area</p> <p>Transformations</p> <p>Linear Graphs</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3</p>	<p>Volumes and Surface Areas of Prisms & Curved Shapes and Pyramids</p> <p>Charts, Tables and Averages</p> <p>Oak Academy link 1 Oak Academy link 2</p>	<p>Number and Sequences</p> <p>Linear Inequalities</p> <p>Probability and Events</p> <p>Oak Academy link 1 Oak Academy link 2 Oak Academy link 3</p>	<p>Pythagoras' Theorem</p> <p>Measures and Scale Drawings</p> <p>Oak Academy link 1 Oak Academy link 2</p>



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		Oak Academy link 3 Oak Academy link 4				
Year 11: GCSE HIGHER	Graphs Oak Academy link 1 Oak Academy link 2 Oak Academy link 3 Oak Academy link 4 Oak Academy link 5	Algebra Oak Academy link 1 Oak Academy link 2 Oak Academy link 3 Oak Academy link 4	Reasoning Oak Academy link 1 Oak Academy link 2 Oak Academy link 3 Oak Academy link 4	Revision and Communication Oak Academy link 1 Oak Academy link 2 Oak Academy link 3 Oak Academy link 4	Revision	Exams
Year 11: GCSE FOUNDATION	Simultaneous Equations Percentages and Compound Measures Percentages and Variation Oak Academy link 1 Oak Academy link 2	Powers and Standard Form Quadratics Representation and Interpretation Oak Academy link 1 Oak Academy link 2 Oak Academy link 3	Non linear graphs Combined Events Constructions and Loci Congruence and Similarity Vectors Oak Academy link 1 Oak Academy link 2 Oak Academy link 3 Oak Academy link 4 Oak Academy link 5	Right angled triangles Revision Oak Academy link 1	Revision	Exams



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Curriculum overview

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Subject	Mathematics	Year group	10F
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>		
KS2 National Curriculum summary:	<p>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</p>		



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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



CRITICAL THINKING

Organisation



ORGANISATION

Collaboration



COLLABORATION

Adaptability



ADAPTABILITY

Oracy



ORACY

Self-quizzing



SELF QUIZZING



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	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 do you carry out calculations with fractions and/or decimals?</p> <p>How can you use algebra to model problems?</p>	<p>How can rounding affect real life situations?</p> <p>How are ratios used to show comparisons?</p> <p>What are the main angle facts?</p>	<p>How can you problem solve with area and perimeter?</p> <p>What happens to shapes when they are transformed?</p> <p>In what situations can linear graphs be plotted?</p>	<p>What are the key formulae used with volume and surface area?</p> <p>What is the best average to use?</p>	<p>Can you think of any real life sequences you have seen?</p> <p>How does solving linear inequalities differ to solving equations?</p>	<p>What's special about triangles?</p> <p>In what situations would a scale drawing be useful?</p>
Content (Linked to TCs):	<p>TC1 Algebraic manipulation</p> <p>TC2 Number sense</p> <p>1. Decimals and Fractions</p> <ul style="list-style-type: none"> Calculating with decimals Fractions and reciprocals Writing one quantity as a fraction of another Adding and subtracting fractions Multiplying and dividing fractions Fractions on a calculator <p>2. Expressions and Formulae</p> <ul style="list-style-type: none"> Basic algebra Expanding brackets 	<p>TC2 Number sense</p> <p>TC3 Shape facts</p> <p>TC4 Multiplicative reasoning</p> <p>4. Approximations</p> <ul style="list-style-type: none"> Rounding whole numbers Rounding decimals Approximating calculations <p>5. Ratio, Speed and Proportion</p> <ul style="list-style-type: none"> Ratio Best buys Speed, distance and time Direct proportion problems <p>6. Angles</p> <ul style="list-style-type: none"> Angles facts Triangles 	<p>TC1 Algebraic manipulation</p> <p>TC3 Shape facts</p> <p>7. Perimeter and Area</p> <ul style="list-style-type: none"> 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 <p>8. Transformations</p> <ul style="list-style-type: none"> Rotational symmetry Translation Reflections Rotations Enlargements Using more than one transformation 	<p>TC3 Shape facts</p> <p>TC5 Representing and interpreting data</p> <p>TC6 Calculator skills</p> <p>10. Volumes and Surface Areas of Prisms & Curved Shapes and Pyramids</p> <ul style="list-style-type: none"> 3D shapes Volume and surface area of a cuboid Volume and surface area of a prism Volume and surface area of cylinders Sectors Pyramids Cones Spheres <p>11. Charts, Tables and Averages</p> <ul style="list-style-type: none"> Frequency tables Statistical diagrams 	<p>TC1 Algebraic manipulation</p> <p>TC2 Number sense</p> <p>TC7 Understanding and calculating risk</p> <p>12. Number and Sequences</p> <ul style="list-style-type: none"> Patterns in number Number sequences Finding the nth term of a linear sequence Special sequences General rules from given patterns <p>13. Linear Inequalities</p> <ul style="list-style-type: none"> Linear inequalities <p>14. Probability and Events</p> <ul style="list-style-type: none"> Calculating probabilities 	<p>TC3 Shape facts</p> <p>TC4 Multiplicative reasoning</p> <p>15. Pythagoras' Theorem</p> <ul style="list-style-type: none"> Pythagoras' theorem Calculating the length of the shorter side Applying Pythagoras' theorem in real-life situations Pythagoras' theorem and isosceles triangles <p>16. Measures and Scale Drawings</p> <ul style="list-style-type: none"> Systems of measurement Conversion factors Scale drawings



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	<ul style="list-style-type: none"> • Substitution • Changing the subject of a formula <p>3. Linear Equations</p> <ul style="list-style-type: none"> • Solving linear equations • Solving equations with brackets • Solving equations with the variable on both sides 	<ul style="list-style-type: none"> • Angles in a polygon • Regular polygons • Angles in parallel lines • Special quadrilaterals • Bearings 	<ul style="list-style-type: none"> • Vectors <p>9. Linear Graphs</p> <ul style="list-style-type: none"> • Graphs and equations • Drawing linear graphs by finding points • Gradient of a line • $y = mx + c$ • Finding the equation of a line from its graph • The equation of a parallel line • Real-life uses of graphs • Solving simultaneous equations using graphs 	<ul style="list-style-type: none"> • Line graphs • Statistical averages 	<ul style="list-style-type: none"> • Probability that an outcome will not happen • Mutually exclusive and exhaustive outcomes • Experimental probability • Expectation • Choices and outcomes • Combined events • Tree diagrams 	<ul style="list-style-type: none"> • Nets • Using an isometric grid
Key vocabulary:	Integer, Fraction, Numerator, Denominator, Equivalent, Mixed numbers, Improper fractions, Inverse, Commutative, Substitute, Evaluate, Simplify, Equivalent, Coefficient, Solve	Round, estimate, ratio, proportion, polygon, parallel, bearing.	Compound, pi, area, rotational symmetry, translate, reflect, rotate, enlarge, vector, gradient, y intercept, simultaneous equation.	Volume, surface area, sector, arc, men, median, mode, range, frequency.	Nth term, linear sequence, non-linear sequence, geometric, inequality, probability, mutually exclusive, experimental probability, theoretical probability.	Pythagoras, hypotenuse, convert, scale.
Assessment:	KLT 1	PPE 1	KLT 3	KLT 4		PPE
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 	<ul style="list-style-type: none"> • Confusing perimeter and area 	<ul style="list-style-type: none"> • Mean Vs median Vs 'average' 	<ul style="list-style-type: none"> • Probabilities >1 • Use of ratios for probabilities 	<ul style="list-style-type: none"> • When finding a shorter side or



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- Failure to recognise rules of parallel lines can be applied to bearings

- 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

- Knowing when to add and when to multiply probabilities

longer side using Pythagoras

Sequencing:

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.

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.

Values

This scheme of work promotes the school values of Compassion, Curiosity and Courage by:

Compassion - Students show compassion through a culture of being non-judgmental when questions are answered incorrectly.

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.

Courage - Students are encouraged to show courage through attempting questions



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National Curriculum plus:

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.

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:

- 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