CURIOSITY COMPASSION COURAGE

Academic outline 2024-25

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

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

		Oak Academy link 2 Oak Academy link 3 Oak Academy link 4	Oak Academy link 3	Oak Academy link 2	Oak Academy link 3	
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

Subject	Mathematics	Year group	9

Vision statement:	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. 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: *'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.'* 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.
Curriculum intent:	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. Students will be taught to have a firm understanding of number bonds and be confident in using non-calculator strategies for solving problems. Students will be stretched and challenged through problem solving tasks to develop resilience. 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. This will be achieved by staff working together in planning lessons that allow ALL students to achieve/ exceed their potential through: 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):	**TC1 Algebraic manipulation** - This concept involves recognising mathematical properties and relationships using symbolic representation **TC2 Number sense** - This concept involves understanding the number system and how they are used in a wide variety of mathematical ways **TC3 Shape facts** - This concept involves recognising the names and properties of geometry shapes and angles. **TC4 Multiplicative reasoning** - This concept involves using ratio and proportion and understanding of reciprocals in real world applications **TC5 Representing and interpreting data** - This concept involves interpreting, manipulating and presenting data in various ways. **TC6 Calculator skills** - This concept involves fluent application of mathematical operations on a scientific calculator **TC7 Understanding and calculating risk** - This concept involves knowing the rules of probability in the correct context
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
	CRITICAL THINKING	ORGANISATION	COLLABORATION	ADAPTABILITY	ORACY	SELF QUIZZING

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The Big Question						
Big picture questions:	How do I use algebra to represent and solve problems?	Why are shapes important?	What is tax and how is it calculated?	Who was Pythagoras and what did he do?	What is scale and why is it important?	What is the probability it will happen?
Content (Linked to TCs):	TC1 Algebraic manipulation • R - Lines, parallel to the axes, y = x and y = -x • Using table of values • Compare gradients • Compare intercepts • Understand and use y=mx+c • Write an equation in the form y = mx+c • Find the equation of a line from a graph • Interpret gradient and intercepts of real-life graphs • Model real-life graphs involving inverse proportion • Explore perpendicular lines • R - Solve one and two-step equations and inequalities • R - Solve one and two-step equations and inequalities with brackets • Inequalities with negative numbers	TC3 Shape facts • Know names of 2-D and 3-D shapes • Recognise prisms • Accurate nets of cuboids and other 3-D shapes • sketch and recognise nets of cuboids and other 3-D shapes • plans and elevations • R - Find area of 2-D shapes • Surface area of cubes and cuboids • surface area of triangular prisms • surface area of a cylinder • volume of cubes and cuboids • Volume of other 3-D shapes - prisms and cylinders • Explore volumes of cone, pyramids and spheres • R - draw and measure angles	TC2 Number sense TC6 Calculator skills • Integers, real and rational numbers • Understand and use surds • R - Work with directed number • Solve problems with integers • Solve problems with decimals • R - HCF and LCM • R - Adding and subtracting fractions • R - Multiplying and dividing fractions • Solving problems with fractions • R - Numbers in standard form • R - Use the equivalence of fractions, decimals and percentages • R - Calculate percentage increase and decrease • R - Express a change as a percentage	TC3 Shape facts • R - Angles in parallel lines • Solving angles problems (using chains of reasoning) • Angles problems with algebra • Conjectures with angles • Conjectures with shapes • Link constructions and geometrical reasoning • Identify the order of rotational symmetry of a shape • Compare and contrast rotational symmetry with line symmetry • Rotate a shape about a point on a shape • Rotate a shape about a point not on a shape • Translate points and shapes by a given vector	TC3 Shape facts TC4 Multiplicative reasoning TC6 Calculator skills • Recognise enlargement and similarity • Enlarge a shape by a positive integer scale factor • Enlarge a shape by a positive integer scale factor from a point • Enlarge a shape by a positive fractional scale factor • Enlarge a shape by a negative scale factor • Work out missing sides and angles in a pair of given similar shapes • Solve problems with similar triangles • Explore ratios in right-angled triangles • R - Solve problems with direct proportion	TC1 Algebraic manipulation TC7 Understanding and calculating risk • R - Single event probability • Relative frequency - include convergence • Expected outcomes • Independent events • Use tree diagrams • Use tree diagrams to solve 'without replacement' problems • Use tree diagrams to work out probabilities • Draw and interpret quadratic graphs • Interpret graphs, including reciprocal and piece-wise • Investigate graphs of simultaneous equations • Represent inequalities

	• Solve equations with unknowns on both sides • Solve inequalities with unknowns on both sides • Solving equations and inequalities in context • Substituting into formulae and equations • Rearranging formulae (one-step) • Rearranging formulae (two-step) • Rearrange complex formulae including brackets and squares • R - Factors, multiples and primes • True or false • Always, sometimes, never true • Show that • Conjectures about number • Expand a pair of binomials • Conjectures with algebra • Explore the 100 grid	• R - construct and interpret scale drawings • Locus of distance from a point • Locus of distance from a straight line/shape • Locus of points equidistant from two points • construct a perpendicular bisector • Construct a perpendicular from a point • Construct a perpendicular to a point • Locus of distance from two lines • Construct an angle bisector • R - Construct triangles from given information • Identify congruent figures • Explore congruent triangles • Identify congruent triangles	• Solve 'reverse' percentage problems • Recognise and solve percentage problems (non-calc) • R - Recognise and solve percentage problems (calc) • Solve problems with repeated percentage change • Solve problems with bills and bank statements • Calculate simple interest • Calculate compound interest • Solve problems with VAT • Calculate wages and taxes • Solve problems with exchange rates • Solve unit pricing problems	• Compare rotation and reflection of shapes • Find the result of a series of transformations • R - Squares and square roots • Identify the hypotenuse of a right-angled triangle • Determine whether a triangle is right angled • Calculate the hypotenuse of a right-angled triangle • Calculate missing sides in right-angled triangles • Use Pythagoras' theorem on coordinate axes • Explore proofs of Pythagoras' theorem • Use Pythagoras' theorem in 3-D shapes	• R - Direct proportion and conversion graphs • Solve problems with inverse proportion • Graphs of inverse relationships • R - Solve ratio problems given the whole or part • Solve 'best-buy' problems • Solve problems ratio and algebra • Solve speed, distance and time problems without a calculator • Solve speed, distance and time problems with a calculator • Use distance/time graphs • Solve problems with density, mass and volume • Solve flow problems and their graphs • Rates of change and their units • Convert compound units
Key vocabulary:	Gradient: the steepness of a line Intercept: where two lines cross.	2D: two dimensions to the shape e.g. length and width	Integer: a whole number that is positive or negative	Parallel: two straight lines that never meet with the same gradient.	Similar Shapes: shapes of different sizes that have corresponding sides in equal proportion	Convert: change Mass: a measure of how much matter is in an

	The y-intercept: where the line meets the y-axis.	3D: three dimensions to the shape e.g. length, width and height	Rational: a number that can be made by dividing two integers	Perpendicular: two straight lines that meet at 90º	and identical corresponding angles.	object. Commonly measured by weight.
	Parallel: two lines that never meet with the same gradient.	Vertex: a point where two or more line segments meet Edge a line on the boundary joining two vertex	Irrational: a number that cannot be made by dividing two integers	Transversal: a line that crosses at least two other lines.	Scale Factor: the multiple describing how much a shape has been enlarged	Origin: the coordinate (0, 0)
	Co-ordinate: a set of values that show an exact position on a graph.	Face: a flat surface on a solid object	Inverse operation: the operation that reverses the action	Sum: the result of adding two or more numbers.	Enlarge: to change the size of a shape (enlargement is not always making a shape bigger)	Volume: the amount of 3D space a shape takes up
	Linear: linear graphs (straight line) – linear common difference by addition/ subtraction	Cross-section: a view inside a solid shape made by cutting through it	Quotient: the result of a division	Conjecture: a statement that might be true but is not proven.	Corresponding: objects (or sides) that appear in the same place in two similar situations.	Substitute: putting numbers where letters are – replacing numbers into a formula
	Asymptote: a straight line that a graph will never meet.	Plan: a drawing of something when drawn from above (sometimes birds eye view)	Product: the result of a multiplication. Multiples: found by multiplying any number by positive integers	Equation: a statement that says two things are equal	Image: the picture or visual representation of the shape	Quadratic: a curved graph with the highest power being 2. Square power.
	Reciprocal: a pair of numbers that multiply together to give 1.	Perspective: a way to give illustration of a 3D shape when drawn on a flat surface	Factor: integers that multiply together to get another number	Polygon: a 2D shape made from straight edges.	Proportion: a comparison between two numbers	Inequality: makes a non equal comparison between two numbers
	Perpendicular: two lines that meet at a right angle	Protractor: piece of equipment used to measure and draw angles	Percent: parts per 100 – written using the % symbol.	Counterexample: an example that disproves a statement	Ratio: a ratio shows the relative size of two variables	Reciprocal: a reciprocal is 1 divided by the number
	Inequality: an inequality compares who values showing if one is greater than, less than or equal to another	Locus: set of points with a common property Equidistant: the same distance	Decimal: a number in our base 10 number system. Numbers to the right of the decimal place are called decimals.	Rotate: a rotation is a circular movement. Symmetry: when two or more parts are identical after a transformation.	Direct proportion: as one variable is multiplied by a scale factor the other variable is multiplied by the same scale factor.	Cubic: a curved graph with the highest power being 3. Cubic power. Origin: the coordinate (0, 0)
	Variable: a quantity that may change within the context of the problem		Fraction: a fraction represents how many	Regular: a regular shape has angles and sides of equal lengths.	Inverse proportion:: as one variable is multiplied	Parabola: a 'u' shaped curve that has mirror symmetry

Rearrange: Change the order

Inverse operation: the operation that reverses the action

Substitute: replace a variable with a numerical value

Solve: find a numerical value that satisfies an equation

Multiples: found by multiplying any number by positive integers

Factor: integers that multiply together to get another number.

Prime: an integer with only 2 factors.

HCF: highest common factor (biggest factor two or more numbers share)

LCM: lowest common multiple (the first time the times table of two or more numbers match)

Verify: the process of making sure a solution is correct | Discorectangle: (a stadium) – a rectangle with semi circles at either end

Perpendicular: lines that meet at 90°

Arc: part of a curve

Bisector: a line that divides something into two equal parts

Congruent: the same shape and size | parts of a whole value you have.

Equivalent: of equal value.

Reduce: to make smaller in value.

Growth: to increase/ to grow.

Integer: whole number, can be positive, negative or zero.

Invest: use money with the goal of it increasing in value over time (usually in a bank).

Multiplier: the number you are multiplying by.

Profit: the income take away any expenses/ costs

Credit: money being placed into a bank account

Debit: money that leaves a bank account

Balance: the amount of money in a bank account | Invariant: a point that does not move after a transformation.

Vertex: a point two edges meet.

Horizontal: from side to side

Vertical: from up to down

Square number: the output of a number multiplied by itself

Square root: a value that can be multiplied by itself to give a square number

Hypotenuse: the largest side on a right angled triangle. Always opposite the right angle.

Opposite: the side opposite the angle of interest

Adjacent: the side next to the angle of interest | by a scale factor the other is divided by the same scale factor

Convert: change

Mass: a measure of how much matter is in an object. Commonly measured by weight.
Origin: the coordinate (0, 0)

Volume: the amount of 3D space a shape takes up

Substitute: putting numbers where letters are – replacing numbers into a formula | |

			Expense: a cost/ outgoing. Deposit: an initial payment (often a way of securing an item you will later pay for) Multiplier: a number you are multiplying by. (Multiplier more than 1 = increasing, less than 1 = decreasing) Per Annum: each year Currency: the type of money a country uses. Unitary: one – the cost of one			
	Proof: logical mathematical arguments used to show the truth of a statement Binomial: a polynomial with two terms Quadratic: a polynomial with four terms (often simplified to three terms)					
Assessment:	KLT 1	KAT 1	KLT 3	KLT 4		KAT 2
Key/Historical misconceptions in this unit:	• Calculating gradient as change in x over change in y • $y_1-y_2/x_2-x_1 = m$ • Solve 2-step by inverse operation of coefficient of the variable without adjusting constant • Confuse gradient and intercept • Confuse y=c with x=c • Expanding a bracket using a negative	• Cuboids and cubes	• Adding denominators; failing to obtain common denominator before adding/subtracting • Multiply both numerator and denominator by a scalar • Reverse percentage: Use of the original percentage to get	• Failure to use correct CoR • Forgetting to square root when using Pythagoras theorem • $a^2 = h^2 + b^2$ •	• Similar shapes have the same angles, regardless of linear scale factor • Gradient of distance time = speed •	• Probabilities >1 • Use of ratios for probabilities • Knowing when to add and when to multiply probabilities •

	coefficient but not changing the signs		back to starting amount • Compound Vs simple interest • Percentage change using original value • Not correctly understanding mixed numbers • Confuse factors for multiples			
Sequencing:	We have chosen to sequence the year 9 curriculum like this because builds on their previous knowledge and begin to put in place the foundations to build upon in future years. Students begin to work towards higher or foundation pathways. 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 will begin looking at sequences with surds and quadratic sequences in the summer term.					
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					
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