Subject	Mathematics	Year group	7

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
	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 find and generate patterns?	How can you write numbers in different ways?	What strategies do I need for different operations?	How do you work with fractions?	How do I use mathematical equipment accurately?	How can I use Venn diagrams to solve maths problems?
Content (Linked to TCs):	TC1 – Algebraic Manipulation TC2 – Number Sense TC6 – Calculator Skills • Describe and continue a sequence given diagrammatically • Predict and check the next term(s) of a sequence • Represent sequences in tabular and graphical forms • Recognise the difference between linear and non-linear sequences • Continue numerical linear sequences • Continue numerical non-linear sequences	TC2 – Number Sense TC6 – Calculator Skills • Recognise the place value of any digit in an integer up to one billion • Understand and write integers up to one billion in words and figures • Work out intervals on a number line • Position integers on a number line • Round intervals to the nearest power of 10 • Compare two numbers using =, ≠, <, >, ≤ and ≥	TC2 – Number Sense TC6 – Calculator Skills • Properties of addition and subtraction • Mental strategies for addition and subtraction • Use formal methods for addition of integers • Use formal methods for addition of decimals • Use formal methods for subtraction of integers • Use formal methods for	TC2 – Number Sense • Understand and use representations of directed numbers • Order directed numbers using lines and appropriate symbols • Perform calculations that cross zero • Add directed numbers • Subtract directed numbers • Multiplication of directed numbers • Multiplication and division of directed numbers	TC3 – Shape Facts • Understand and use letter and labelling conventions including those for geometric figures • Draw and measure line segments including geometric figures • Understand angles as a measure of turn • Classify angles • Measure angles up to 180 degrees. Draw angles up to 180 degrees. • Draw and measure angles between 180 and 360 degrees	TC2 – Number Sense TC7 – Understanding and Calculating Risk • Know and use mental addition and subtraction strategies for integers • Know and use mental multiplication and division strategies for integers • Know and use mental strategies for decimals • Know and use mental strategies for fractions • Use factors to simplify calculations

CURIOSITY

- Explain the term-to-term rule of numerical sequences in words
- H - Find missing numbers within sequences
- Given a numerical input, find the output of a single function machine
- Use inverse operations to find the input given the output
- Use diagrams and letters to generalise number operations
- Use diagrams and letters with single function machines
- Find the function machine given a simple expression
- Substitute values into single operation expressions
- Find numerical inputs and outputs for a series of two function machines
- Use diagrams and letters with a series of two function machines
- Find the function machine given a two-step expression
- Substitute values into two-step expressions
- Generate sequences given an algebraic rule

- Order a list of integers
- Find the range of a set of numbers
- Find the median of a set of numbers
- Understand place value for decimals
- Position decimals on a number line
- Compare and order any number up to one billion
- Round a number to 1 significant figure
- H - Write 10, 100, 1000 etc as powers of 10
- H - Write positive integers in the form A x 10^n
- H - Investigate negative powers of 10
- H - Write decimals in the form A x 10^n
- Represent tenths and hundredths as diagrams
- Represent tenths and hundredths on number lines
- Interchange between fractional and decimal number lines

COMPASSION

- subtraction of decimals
- Choose the most appropriate method: mental strategies, formal written or calculator
- Solve problems in the context of perimeter
- Solve financial maths problems
- Solve problems involving tables and timetables
- Solve problems with frequency trees
- Solve problems with bar charts and line charts
- H - Add and subtract numbers given in standard form
- Properties of multiplication and division
- Understand and use factors
- Understand and use multiples
- Multiply and divide integers and decimals by powers of 10

- Use a calculator for directed number calculations
- Evaluate algebraic expressions with directed number
- Introduction to two-step equations
- Solve two-step equations
- Use order of operations with directed numbers
- H - Understand that positive numbers have more than one square root
- H - Explore higher powers and roots
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- Understand representations of fractions
- Convert between mixed numbers and fractions
- Add and subtract unit fractions with the same denominator
- Add and subtract fractions with the same denominator
- Add and subtract fractions from integers expressing the answer as a single fraction

COURAGE

- Identify parallel and perpendicular lines.
- Recognise types of triangle
- Identify polygons up to decagons.
- Recognise types of quadrilaterals
- Construct triangles using SSS
- Construct triangles using SSS, SAS and ASA
- Construct more complex polygons
- Interpret simple pie charts using proportion
- Interpret pie charts using a protractor
- Draw pie charts
- Understand and use the sum of angles at a point
- Understand and use the sum of angles on a straight line
- Understand and use the equality of vertically opposite angles
- Know and apply the sum of angles in a triangle
- Know and apply the sum of angles in a quadrilateral

- Use estimation as a method for checking mental calculations
- Use known number facts to derive other facts
- Use known algebraic facts to derive other facts
- Know when to use a mental strategy, formal written method or a calculator
- Identify and represent sets
- Interpret and create Venn diagrams
- Understand and use the intersection of sets
- Understand and use the union of sets
- H - Understand and use the complement of sets
- Know and use the vocabulary of probability
- Generate sample spaces for single events
- Calculate the probability of a single event
- Understand and use the probability scale

• Represent one- and two-step functions graphically • Understand the meaning of equality • Understand and use fact families, numerically and algebraically • Solve one-step linear equations involving addition and subtraction using inverse operations • Solve one-step linear equations involving multiplication and division using inverse operations • Understand the meaning of like and unlike terms • Understand the meaning of equivalence • Simplify algebraic expressions by collecting the like term using the ≡ symbol	• Convert between fractions and decimals - tenths and hundredths • Convert between fractions and decimals - fifths and quarters • H - Convert between fractions and decimals - eighths and thousandths • Understand the meaning of percentage using a hundred square • Convert fluency between simple fractions, decimals and percentages • Use and interpret pie charts • Represent any fraction as a diagram • Represent fractions on number lines • Identify and use simple equivalent fractions • Simplify fractions (no small step on this - but this is in the assessment) • Understand fractions as division	• H - Multiply by 0.1 and 0.01 • Convert metric units • Use formal methods to multiply integers • Use formal methods to multiply decimals • Use formal methods to divide integers • Use formal methods to divide decimals • Understand and use order of operations • Solve problems using the area of rectangles and parallelograms • Solve problems using the area of triangles • H - Solve problems using the area of trapezia • Solve problems using the mean • H - Explore multiplication and division in algebraic expressions • Find a fraction of a given amount • Use a given fraction to find the whole	• Understand and use equivalent fractions • Add and subtract fractions where denominators share a simple common multiple • Add and subtract fractions with any denominator • Add and subtract improper fractions and mixed numbers • Use fractions in algebraic contexts • Use equivalence to add and subtract decimals and fractions • H - Add and subtract simple algebraic fractions	• Solve angle problems using properties of triangles and quadrilaterals • Solve complex angle problems • H - Find and use the angle sum of any polygon • H - Investigate angles in parallel lines • H - Understand and use parallel line angle rules • H - Use known facts to obtain simple proofs	• Know that the sum of probabilities of all possible outcomes is 1 • Find and use multiples • Identify factors of numbers and expressions • Recognise and identify prime numbers • Recognise square and triangular numbers • Find common factors of a set of numbers including the HCF • Find common multiples of a set of numbers including the LCM • Write a number as a product of its prime factors • H - Use a Venn diagram to calculate the HCF and LCM • Make and test conjectures • Use counterexamples to disprove a conjecture

		• Convert fluently between FDP • H - Explore fractions above one, decimals and percentages	and/or other fractions • Find a percentage of a given amount using mental methods • Find a percentage of a given amount using a calculator • H - Solve problems with fractions greater than 1 and percentages greater than 100%			
Key vocabulary:	Sequence, linear, non-linear, substitution, function, equation, inverse, like terms.	Integer, round, median, range, significant figure, equivalent, convert.	Integer, addition, subtraction, multiplication, division, fraction, numerator, denominator.	Directed number, negative, calculate, equation, power, root, mixed number, multiple.	Geometric, angle, parallel, perpendicular, measure, protractor, construct, pie chart, triangle, quadrilateral, proof.	Venn diagrams, intersection, union, sample space, probability, triangular numbers, HCF, LCM.
Assessment:	Topic Assessments	Topic Assessments	Topic Assessments Summative Assessment 1 (Date)	Topic Assessments	Topic Assessments	Topic Assessments Summative Assessment 2
Key/Historical misconceptions in this unit:	• Sequences must be increasing. • Sequences must be linear. • Division/subtraction are commutative. (m/6 = 12 => m =2)	• Misuse of inequality symbols. • Can't have greater than 100% • Carrying out division in the wrong order when given as a fraction.	• Confusing perimeter and area. • Numbers wrong way around in the bus stop method. • Following BIDMAS in a strict order.	• Two Negatives make a positive. • Adding and subtracting denominators. • Simplifying factions can only be performed by halving.	• Confusing angle measure and line measure. • Using the wrong scale on the protractor. • Incorrect identification of relevant angles in applying a given angle rule.	• Replication of elements in the intersection. • 9 is a prime number. • Confusing factors and multiples.

Sequencing:	We have chosen to sequence the year 7 curriculum like this because builds on their previous knowledge and begin to put in place the foundations to build upon in future years. For example - In year 7 they start with sequences which will consolidate work previously done in primary school and formalise their understanding (Recognise linear and non-linear sequences) which is then extended by using algebraic notation (Generate sequences from an algebraic rule) in the following block. By introducing algebra early it is then used throughout the scheme to extend and stretch students understanding. Algebra and sequences are then revisited in year 8 during the spring term (Revise and extend Y7 coverage to include more complex rules) to further extend and embed understanding.
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.