Year 7 Curriculum Implementation Plan

(All students in Year 7 follow this curriculum.)

Mathematics – Year 7 – Overview				
Knowledge and Skills – Students will be taught to…	Reading, Oracy, Literacy	Formative Assessment	Summative Assessment	Link to GCSE Content
Please see individual units below.	• Reading worded questions to understand the context and decide how to approach a problem • Paired discussion of problems • Writing responses to worded questions such as "Explain why…" • Expanding vocabulary of key mathematical terms • Giving verbal responses in class question-and-answer	• Questioning in class • Self-assessment • Peer-assessment • Starter and homework questions • Mini-tests • Show of hands and other forms of whole-class feedback • Review of student work during lessons • Mini-whiteboards	Whole-class assessments towards the end of each term, based on work completed during the year to date. Additional topic-based mini-assessments during the year.	Please see individual units below.

Mathematics – Unit 1 – Exploring sequences	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Describe and continue sequences in diagram and number forms, both linear and non-linear. Extension objective: • Find missing numbers within sequences	Make and test conjectures about patterns and relationships Recognise arithmetic sequences, geometric sequences, and appreciate other sequences that arise Generate terms from term-to-term rules Generate terms from a term-to-term rule Recognise/use sequences of triangular, square, cube numbers & simple arithmetic progressions
Mathematics – Unit 2 – Understanding and using algebraic notation	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Using single function machines and series of two function machines with numbers, bar models and letters • Forming and substituting into expressions, including generating sequences • Representing functions graphically.	Understand linear and simple quadratic functions Formulate proportional relationships algebraically Use and interpret algebraic notation including ab, 3y, a^2, a^2b, a/b, brackets Make connections between number relationships and their algebraic representations Interpret simple expressions as functions with inputs and outputs Use and interpret algebraic notation including ab, 3y, a^2, a^3, a^2b, a/b, brackets
Mathematics – Unit 3 – Equality and equivalence	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Understanding equality and fact families • Forming and solving one step equations • Understanding equivalence • Collecting like terms	Simplify expressions by collecting like terms Solve linear equations in one variable Simplify expressions by collecting like terms Solve linear equations in one unknown
Mathematics – Unit 4 – Place value and ordering	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Understand integer place value up to one billion. • Understand decimal place value to hundredths • Working out and using number lines • Comparing and ordering numbers • Use the range and median • Round to positive powers of ten and one significant figure	Understand place value in numbers to 10 million Read/write/compare numbers up to 10 million Use the symbols =, ≠, <, >, ≥, ≤ Understand and use place value, e.g. when working with very large or very small numbers and when calculating with decimals

Extension objective: • Write large and small numbers in standard form.	
Mathematics – Unit 5 – Fraction, decimal and percentage equivalence	
Knowledge and Skills – Students will be taught to…	**Links to KS3 National Curriculum Content (green) and GCSE Content (blue)**
• Represent tenths and hundredths on diagrams and number lines. • Interchange between fractions, decimals and percentages for multiples of tenths and quarters. • Interpret pie charts • Use equivalent fractions • Convert between any fraction, decimal and percentage Extension objectives:- • Interchange between fractions, decimals and percentages for multiples of eighths and thousandths • Use fractions greater than one	Order positive & negative integers, decimals and fractions. Work interchangeably with terminating decimals and their corresponding fractions Construct/interpret pie charts for categorical data Work interchangeably with terminating decimals and their corresponding fractions Construct/interpret pie charts for categorical data Interpret, analyse and compare distributions through graphical representation involving discrete, continuous and grouped data
Mathematics – Unit 6 – Addition and subtraction	
Knowledge and Skills – Students will be taught to…	**Links to KS3 National Curriculum Content (green) and GCSE Content (blue)**
• Use formal methods of addition with integers and decimals. • Solve problems in the context of perimeter, money and frequency trees and tables. Extension objective: • Add and subtract numbers in standard form.	Use the four operations applied to integers and decimals Solve problems involving the perimeter of shapes, including composite shapes Interpret/compare numbers in standard form Apply the four operations, including formal written methods to integers and decimals Record, describe and analyse the frequency of outcomes of simple probability experiments using tables and frequency trees Calculate with and interpret standard form Calculate the perimeters of 2D shapes
Mathematics – Unit 7 – Multiplication and division	
Knowledge and Skills – Students will be taught to…	**Links to KS3 National Curriculum Content (green) and GCSE Content (blue)**
• Multiply by 10, 100 and 1000 and apply to unit conversions • Use formal methods for multiplication and division • Find the Highest Common Factor and Lowest Common Multiple of sets of numbers. • Find areas of triangles, rectangles and parallelograms.	Use the four operations applied to integers and decimals Use a calculator and other technologies to calculate results accurately and then interpret them appropriately Use the concepts and vocabulary of factors (or divisors), multiples, common factors, common multiples, HCF, LCM

• Find the mean • Solve two step equations (with and without a calculator) • Use BIDMAS for order of operations Extension objectives:- • Find areas of trapezia • Multiply and divide algebraic expressions	Use the order of operations with brackets, powers, roots and reciprocals Derive/apply formulae to calculate and solve problems involving the area of triangles, parallelograms and trapezia Solve problems involving the area of shapes, including composite shapes Apply the four operations, including formal written methods to integers and decimals Use the concepts and vocabulary of factors (or divisors), multiples, common factors, common multiples, HCF, LCM Use conventional notation for priority of operations, including brackets, powers, roots and reciprocals Know and apply formulae to calculate areas of triangles, parallelograms and trapezia
Mathematics – Unit 8 – Fractions & percentages of amounts	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Find fractions of amounts • Find percentages of amounts	Interpret fractions as operators Interpret percentages as operators Interpret percentages as a fraction or a decimal, interpret these multiplicatively Calculate a fraction of a quantity Calculate a percentage of a quantity
Mathematics – Unit 9 – Negative numbers	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Ordering directed numbers with and without context • Revisit four operations using directed numbers • Use a calculator with directed numbers • Use the order of operations with directed numbers Extension objective: • Explore powers and roots with directed numbers - including knowing the square root of a number can be positive and negative.	Order positive & negative integers, decimals and fractions Use the four operations applied to integers, decimals, proper and improper fractions, mixed numbers, all both positive & negative Use the order of operations with brackets, powers, roots and reciprocals Use a calculator and other technologies to calculate results accurately and then interpret them appropriately Use integer powers and roots (square, cube & higher) Recognise powers of 2, 3, 4, 5 Distinguish between exact representations of roots and their decimal approximations Use the four operations applied to integers, decimals, proper and improper fractions, mixed numbers, all both positive & negative

	Use conventional notation for priority of operations, including brackets, powers, roots and reciprocals Use positive integer powers and associated real roots (square, cube & higher) Recognise powers of 2, 3, 4, 5
Mathematics – Unit 10 – Adding and subtracting fractions	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Represent tenths and hundredths on diagrams and number lines. • Add/subtract fractions with a common denominator, including answers above one. • Revisit equivalent fractions • Add and subtract fractions with different denominators. • Add/subtract fractions and decimals e.g. ½ + 0.2 Extension objective: • Add and subtract algebraic fractions.	Use the four operations applied to integers, decimals, proper and improper fractions, all both positive & negative Interpret fractions as operators Use the four operations applied to integers, decimals, proper and improper fractions, all both positive & negative
Mathematics – Unit 11 – Drawing, measuring and notation	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Draw and measure lines and angles using a ruler and protractor • Understand and use notation for lines and angles • Understand parallel and perpendicular • Recognise types of triangles, quadrilaterals and other polygons. • Draw triangles given SSS, SAS, ASA • Draw and interpret pie charts	Draw/measure lengths & angles, including interpreting scale drawings Describe/sketch/draw points, lines, parallel lines, perpendicular lines and right angles, using conventional terms and notation Use the standard conventions for labelling the sides and angles of a triangle ABC Describe and illustrate properties of triangles, quadrilaterals, etc. Draw diagrams (e.g. triangles) from a written description using standard notation for vertices, angles etc. Use conventional terms and notations: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right angles, polygons and regular polygons Use the standard conventions for labelling the sides and angles of triangles Derive/apply the properties of quadrilaterals including square, rectangle, parallelogram, trapezium, kite, and rhombus Derive/apply the properties of triangles and other shapes using appropriate language

Mathematics – Unit 12 – Geometric reasoning	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Calculate using angles at a point, angles on a straight line and vertically opposite angles. • Calculate missing angles in triangles and quadrilaterals. Extension objective: • Know the angle sum for any polygon.	Apply the properties of angles at a point, on a line, and vertically opposite angles Derive/use the sum of angles in a triangle Deduce the sum of angles in any polygon; derive properties of regular polygons Use properties of quadrilaterals to derive results about angles and sides Apply the properties of angles at a point, on a line, and vertically opposite angles Derive and use the sum of angles in a triangle Deduce the sum of angles in any polygon using the angles in a triangle; derive properties of regular polygons
Mathematics – Unit 13 – Number sense	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Use mental arithmetic strategies • Use known facts to derive other facts including algebraic expressions.	Rearrange and simplify expressions Make connections between number relationships and their algebraic representations
Mathematics – Unit 14 – Sets and probability	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Understand and use set notation • Draw and fill in a Venn diagram • Find the probability of a single event. Extension objective: • Understand the complement of a set	Explore what can and cannot be inferred about probabilities and begin to express arguments formally Record/describe/analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes Use the 0-1 probability scale Enumerate sets using tables, grids and Venn diagrams Generate theoretical sample spaces for events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities Use the 0-1 probability scale Enumerate sets systematically using tables, grids and Venn diagrams

Mathematics – Unit 15 – Prime numbers and proof	
Knowledge and Skills – Students will be taught to…	Links to KS3 National Curriculum Content (green) and GCSE Content (blue)
• Know types of number including prime, square and triangular numbers. • Write a number as a product of its prime factors. • Calculate powers and roots • Use counter-examples	Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, HCF, LCM Use prime factorisation including product notation and the unique factorisation property Use integer powers and roots (square, cube & higher) Recognise powers of 2, 3, 4, 5 Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, HCF, LCM Use prime factorisation including product notation and the unique factorisation property Use positive integer powers and associated real roots (square, cube & higher) Recognise powers of 2, 3, 4, 5