Year 10 Maths Higher Tier Long-Term Plan

	Number	Algebra	Ratio and Proportion	Geometry and Measure	Statistics and Handling Data
EYFS	Count confidently and understand the numbers to 10.	Understand the relationships between numbers and make connections and patterns with numbers.		Develop reasoning skills with space, shape and measure. Build understanding of the 3-D world.	
KS1	Count, read and write numerals to 100. Count in multiples of 2, 3, 5 and 10. Identify and represent numbers using objects. Read, write and calculate, including problem solving, addition, subtraction, multiplication and division statements. Recognise halves, thirds and quarters and calculate simple fractions of an amount. Recognise equivalent fractions and decimals. Recognise place value for 2 and 3-digit numbers. Use <, > and = signs.	Order and arrange combinations of mathematical objects in patterns and sequences.		Compare, describe and solve practical problems involving measure. Measure and record units of measure and their symbols including length, mass, money and time. Begin to tell the time. Recognise the names and properties of common 2-D and 3-D shapes. Solve simple problems involving shape and measure.	

KS2	Count in multiples of 4, 6, 7, 8, 9, 25, 50, 100, 1000. Multiplication facts up to 12x12. Recognise place value in 3-digit numbers. Read, write, compare and order numbers up to 1000000. Solve number problems. Add, subtract, multiply and divide mentally and using written methods. Use inverse operations to check answers. Manipulate and calculate with fractions including, addition and subtraction, fractions of amounts and dividing a fraction by a whole number. Recognise and convert between mixed numbers and improper fractions. Understanding and interpretation of negative numbers. Rounding to the nearest decimal place, 1, 10,	Use simple formulae. Generate and describe linear number sequences. Express missing number problems algebraically. Find pairs of numbers that satisfy an equation with two unknowns. Enumerate possibilities of combinations of two variables.	Solve problems involving the relative sizes of 2 quantities using known multiplication facts. Solve problems involving percentages, including comparison. Solve problems involving scale factor.	Measure, compare, add and subtract measures. Understand and find perimeter and area of squares, rectangles, parallelograms and triangles and their units. Tell the time and understand Roman numerals and convert between 12-hour and 24-hour times. Draw and make 2-D and 3-D shapes and their nets. Understand, measure and identify right angles, acute, obtuse and reflex angles. Know and use angle rules Recognise horizontal, vertical, parallel and perpendicular lines. Convert between different units of measure. Use estimations of different measures. Classify geometric shapes based on their properties. Illustrate and name parts of circles. Identify lines of symmetry. Describe and plot co-ordinates.	Interpret and present data using bar charts, time graphs, pie charts, pictograms and tables. Use a scale in charts. Interpret and solve problems with timetables. Calculate and interpret the mean as an average.

	100, 1000, 10000, 100000. Identify and find multiples, factors and primes including common multiples and factors. Recognise percentages. Convert between fractions, decimals and percentages.			Understand approximate equivalences between metric and imperial units. Carry out and describe translations and reflections.	
KS3	Understand, represent and apply number. Use the 4 operations. Understand fractions, decimals and percentages. Apply understanding of number to solve complex problem solving questions in an unfamiliar context.	Understand and manipulate expressions, equations etc. Solve equations and inequalities. Draw different types of graphs. Recognise and use different types of sequences. Understand the meaning of the equation of a graph. Find and use the nth term of a sequence. Use algebraic knowledge to solve problems.	Understand and use ratio and proportion. Apply knowledge of ratio and proportion to solve more complex problems.	Calculate perimeter and area of common 2D shapes and volume and surface area of common 3D shapes. Construct and transform 2D shapes. Know and understand the properties of 2D and 3D shapes. Know and use angle facts including with parallel lines. Understand and use Pythagoras' theorem to find the hypotenuse and know the trig ratios. Know and use the criteria for congruent triangles. Solve problems involving geometric reasoning.	Understand and use experimental and theoretical probability for single events. Draw, interpret and compare frequency tables and diagrams. Calculate averages and range for a set of data. Draw, use and interpret scatter diagrams. Solve probability problems algebraically. Know what can and cannot be inferred in statistical settings. Calculate averages and range for a set of algebraic terms. Know and understand extrapolation.

Module Title: Number Operations, Algebraic Manipulation, Sequences, Averages and Representing Data	Module Title: Fractions, Percentages and Ratio, Angles, Trigonometry, Co-ordinate Geometry, Linear and Other Graphs	Module Title: Perimeter, Area Volume and Circles, Bounds, Constructions, Quadratics and Simultaneous Equations and Inequalities
Learning Intent for this module: Students will revisit numerical operations they are already familiar with. They will gain confidence in the use of these and extend to laws of indices, standard form and surds. Students will revise their algebraic manipulation skills and will extend this to factorising a range of quadratic functions as well as re-arranging more difficult formulae. Students will build on their sequences knowledge and work with quadratic sequences. Students will calculate and interpret measures of location and spread. Students will display and interpret data from a range of graphs and charts.	Learning Intent for this module: Students will recap and extend their work on fractions percentages and ratio and proportion. This will be also include direct and inverse proportion. Students will learn the angle rules and when to apply them. Students will use Pythagoras' Theorem and right-angled Trigonometry to find missing side lengths and angles as well as solve problems. Students will use a range of Co-ordinate Geometry Formulae in order to understand the graphs and equations of straight lines. This will then lead to looking at quadratic and other graphs.	Learning Intent for this Module: Students will find perimeter, area and volume for a range of 2D and 3D shapes including Cylinders, Cones and Spheres. They will become familiar with the associated formulae. Students will extend their work on rounding by studying bounds. They will solve associated problem questions on this. Students will carry out and describe the four transformations including negative enlargements. Students will use constructions to solve problems on loci. Students will build upon their algebraic skills by solving simultaneous equations and inequalities.

Key Content to be learned: • Calculations, Checking and Rounding • Indices, Roots and Reciprocals • Multiples, Factors, Primes • Standard Form • Surds and Indices • Algebraic Expressions, Substitution, Factorising, Re-arranging and solving Equations and Inequalities • Sequences	Key content to be learned: • Averages and Range • Collecting Data • Representing Data • Cumulative Frequency, Box Plots and Histograms • Fractions and Percentages • Ratio and Proportion • Direct and Inverse Proportion • Polygons, Angles and Parallel Lines • Pythagoras' Theorem and Trigonometry	Key Content to be learned: • Graphs: Basics and Real-Life • Linear Graphs and Co-ordinate Geometry • Quadratic, Cubic and other Graphs, Reciprocal and Exponential Graphs • Solving Quadratic and Simultaneous Equations • Perimeter, Area and Circles • Volume, Cylinders, Cones and Spheres • Accuracy and Bounds • Transformations • Similarity and Congruence in 2D and 3D • Constructions, Loci and Bearings
Key tasks for this module: • Key Task 1 – Number Operations • Key Task 2 – Indices and Standard Form • Key Task 3 – Expressions and Factorising • Key Task 4 - Summative Assessment Paper 1 • Key Task 5 – Summative Assessment Paper 2	Key tasks for this module: • Key Task 1 – Collecting and Representing Data • Key Task 2 – Fractions, Percentages, Ratio and Proportion • Key Task 3 – Pythagoras' Theorem and Trigonometry • Key Task 4 – Summative Assessment Paper 1 • Key Task 5 – Summative Assessment Paper 2	Key tasks for this module: • Key Task 1 – Co-ordinate Geometry and Linear Graphs • Key Task 2 – Solving Quadratics and Simultaneous Equations • Key Task 3 – Area, Volume and Circles • Key Task 4 - End of Year Exam Paper 1 • Key Task 5 - End of Year Exam Paper 2

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Year 11 Maths Higher Tier

Module Title: Probability, Similarity, Further Trigonometry and Circles	Module Title: More Complex Algebra and Equations, Functions, Proof, Vectors and Complex Graphs	Module Title: Revision and Exam Preparation
Learning Intent for this module: Students will extend their probability knowledge. They will learn the laws of probability as well as learning how to use Venn Diagrams Students will explore similarity and congruence in 2D and 3D. The students will build on their Trigonometric knowledge and will learn how to use and apply the Sine and Cosine Rules. Students will extend their knowledge on circles to include the circle theorems and proofs as well as graphs of circles.	Learning Intent for this module: Students will extend their algebraic skills by re-arranging more complex formulae and applying their knowledge and skills on solving quadratic equations to other contexts. Students will be introduced to functions and the associated notation. Students will use vector geometry to solve problems. Students will study a range of proofs including geometrical and algebraic. Students will build upon their knowledge of graphs and will carry out and describe simple transformations of graphs.	Learning Intent for this Module: Students will now consolidate their learning cross the course. Particular revision will focus on areas for improvement identified in mock 2.

Key Content to be learned: • Inequalities • Probability • Multiplicative Reasoning • Graphs of Trigonometric Functions • Further Trigonometry • Quadratics, Graphs of Circles • Circle Theorems • Circle Geometry	Key content to be learned: • Re-arranging Formulae (More Complex), Solving Equations arising from Algebraic Fractions, Simultaneous Equations involving Quadratics • Functions • Proof • Vectors and Geometric Proof • Gradient and Area under Graphs • Transforming Graphs	Key Content to be learned: • Revision and Consolidation of topics based on Mock Data • Exam Preparation
Key tasks for this module: • Key Task 1 – Probability • Key Task 2 – Further Trigonometry • Key Task 3 – Mock 1 Paper 1 • Key Task 4 – Mock 1 Paper 2 • Key Task 5 – Mock 1 Paper 3	Key tasks for this module: • Key Task 1 – Circle Theorems • Key Task 2 – Vectors • Key Task 3 – Mock 1 Paper 1 • Key Task 4 – Mock 1 Paper 2 • Key Task 5 – Mock 1 Paper 3	Key tasks for this module: