Curriculum Map -

Intent:
Our intent is to foster this deep and lasting understanding of mathematics in our students, equipping them with the confidence and skills to apply mathematical concepts throughout their lives. To accomplish this we aim to work with our students to develop resilient, independent learners who approach mathematics with curiosity and confidence. Creating a supportive and stimulating learning environment, to instill a love for mathematics, encouraging students to see its relevance and power in the world around them. Furthermore, we aim to nurture critical thinking, problem-solving abilities, and numerical fluency, ensuring students can navigate everyday challenges and pursue their future aspirations with confidence in their mathematical ability.

	Autumn Term	Spring Term	Summer Term
Year 7	**Factors and Multiples & Primes:** Students will learn to list multiples and factors of numbers, find the lowest common multiple (LCM) and highest common factor (HCF) of two numbers, and define prime numbers while memorizing the first 10 primes. **Number Sense:** Students will understand squares and square roots, the order of operations (BIDMAS), and rounding integers to various powers of 10. They will also learn to round numbers to decimal places and understand the value of decimal points. **Positive and Negative Numbers:** Students will learn to represent negative numbers in contexts such as money and temperature, and understand the operations of addition, subtraction, multiplication, and division with negative numbers. Calculator usage for operations with negatives will also be covered. **Terminology in Algebra:** Students will be introduced to algebraic	**Function Machine (Solving Basic Equations):** Students will learn to use function machines to represent and solve simple one and two-step equations. They will understand how to use inverse operations to work backwards from the output to the input in a function machine. **Fractions, Decimals, Percentages Conversions:** Students will practice converting fractions to decimals and vice versa by understanding their equivalence. They will learn to convert between percentages and decimals, and simplify fractional answers after conversion. **Fractions and Percentages of Amounts:** Students will understand how to represent fractions of whole numbers and calculate simple fractions of amounts. They will use mental strategies and calculators to find fractions and percentages of amounts greater than one.	**Geometric Reasoning:** Students will learn to recognize angles on a point and know the sum of angles around a point is 360 degrees. They will also calculate missing angles around a point and on a straight line, recognizing that these sum to 180 degrees. They will understand vertically opposite angles and the angles in triangles and quadrilaterals, and be able to calculate missing angles within these shapes. **Area and Shape:** Students will learn to recognize and name common 2D shapes such as squares, rectangles, triangles, and parallelograms. They will identify and describe the properties of these shapes, including the number of sides, vertices, and angles. They will calculate the perimeter and area of basic 2D shapes and apply formulas for different shapes. Students will solve problems involving composite shapes by decomposing them into simpler shapes to find their area and perimeter.

	concepts, learning to form basic expressions and understand key terms like constant, variable, coefficient, and expression. Simplifying expressions by multiplication and understanding squared variables will also be covered. **Collecting Like Terms:** Students will learn to identify and collect like and unlike algebraic terms, including those with indices up to squared. Techniques using rectangles, circles, and clouds to visualize the process will be practiced. **Area and Perimeter:** Students will learn to recognize and calculate the perimeter and area of various shapes, both by counting units and using given measurements. Creating and simplifying algebraic expressions for perimeter and applying formulas for area calculations will also be covered. **Substitution:** Students will learn to substitute values into formulas for basic 2D shapes while applying BIDMAS rules. Understanding the multiplication of coefficients with bracket pairs will also be covered.	**Adding and Subtracting Fractions:** Students will learn to convert improper fractions to mixed numbers and find a common denominator for addition and subtraction. They will practice adding and subtracting fractions, including those with different denominators, and fractions from whole numbers. **Drawing and Measuring Angles:** Students will use a protractor to measure and draw angles accurately, and classify them as acute, obtuse, right, or straight. They will improve spatial awareness by estimating angles before measuring and verify accuracy by comparing measurements.	**Averages and Range:** Students will learn to describe and calculate the range of a set of numbers. They will understand and calculate the mode, median, and mean of a set of numbers. Students will order numbers in ascending order, find the midpoint of two numbers, and be able to find the new mean after adding a value to the data set. **Sequences:** Students will learn to describe and continue a sequence and find the next term in a sequence. They will represent sequences as tables and patterns, and recognize and describe linear and non-linear sequences. Students will complete linear and non-linear sequences and find the term-to-term rule for any sequence.
Year 8	**Ratio:** Students will learn to understand and represent	**Balancing Equations:** Students will learn that an equation is like a	**Circumference and Perimeter:** Students will understand how to find the

	ratios, using correct notation. They will solve problems involving ratios, simplify ratios, and compare them to fractions. **Proportion:** Students will solve problems involving direct proportion, explore conversion graphs, and convert between currencies. They will understand scale factors, draw and interpret scale diagrams, and explore relationships between similar shapes. **Multiplying and Dividing Fractions:** Students will multiply fractions by integers and find the product of any pair of fractions. They will divide integers by fractions, understand and use reciprocals, and multiply and divide improper and mixed fractions. **Cartesian Planes:** Students will work with coordinates in all four quadrants, plotting and reading coordinates from graphs. They will identify and draw lines parallel to the axes, use the lines y=x and y=kx, explore gradients, and plot graphs of the form y=mx+c. **Expand and Factorise:** Students will multiply out single brackets, including numbers and variables. They will factorise into a single bracket, expand multiple single brackets, simplify expressions, and solve equations involving brackets.	balance scale, where both sides must be equal. They will use inverse operations to isolate the variable and simplify by combining like terms. **Indices in Algebra:** Students will understand that indices show how many times a number is multiplied by itself. They will apply rules for multiplying, dividing, and raising powers to simplify expressions. **Percentage Change:** Students will learn to calculate percentage increase and decrease using a simple formula. They will apply these calculations to real-life situations such as shopping discounts and population growth. **Area and Circles:** Students will understand how to calculate the area of various shapes, including squares, rectangles, triangles, parallelograms, trapeziums, and circles. They will also learn the relationship between the radius and diameter of a circle and how to use Pi (π) in calculations.	perimeter of various shapes, including quadrilaterals and triangles. They will also calculate the circumference of circles and determine the radius and diameter from the circumference. **Solving with Fractions:** Students will learn to solve equations where the variable is in the numerator and with fractional coefficients. They will also solve equations with multiple fractional terms and where the variable is in the denominator. **Graphs and Charts:** Students will interpret scatter plots and draw lines of best fit to identify trends and correlations. They will also create and read bar charts and pie charts, representing data accurately. **Interpreting and Using Data:** Students will calculate quartiles, interquartile range, mean, and median to understand data distribution. They will discuss the consistency of data and interpret its context to draw meaningful conclusions.
Year 9	**Evaluating with Negative Powers:** Students explore the concept of negative	**Percentages using Multiplier:** Students learn to solve percentage problems	**Data Handling - Averages and Range:** Students learn to calculate and interpret

	powers, understanding expressions like 10^{-3} as $\frac{1}{10^3}$ **Standard Form:** Students learn how to express very large or very small numbers using standard form. **Expanding and Factorising Algebraic Expressions:** Students learn techniques to expand expressions like $(a+b)^2$ and factorise expressions such as x^2-4x+4, developing algebraic fluency and problem-solving skills. **Solving Linear Equations:** Students develop skills in solving linear equations l using inverse operations and maintaining equality through balanced transformations, setting a foundation for more complex algebraic manipulations. **Rounding and Estimation:** Students practice rounding numbers to a given decimal place or significant figure, and use estimation techniques to assess reasonableness of calculations, crucial for practical applications. **Rearranging Equations and Formulae:** Students learn to rearrange equations and formulae to isolate variables, facilitating problem-solving in science and real-world contexts where formulas need to be manipulated to find unknown quantities. **Pythagoras' Theorem:** Students explore the relationship in right-angled	using a multiplier, essential for understanding increases, decreases, and compound growth and decay calculations. **Solving Simultaneous Linear Equations:** Students develop skills in solving systems of equations with two variables, using methods like substitution and elimination, enabling them to solve real-world problems algebraically. **Surface Area and Volume of Prisms:** Students study how to calculate the surface area and volume of rectangular prisms. **Solving Linear Inequalities:** Students explore solving inequalities involving linear expressions, understanding how to graph inequalities on a number line and interpret their solutions within given constraints. **Angles on Parallel Lines:** Students learn about angles formed by a transversal intersecting parallel lines, including corresponding angles, alternate angles, and interior angles, applying these relationships to solve geometric problems. **Straight Line Graph - Drawing and Writing Equations:** Students understand how to plot straight line graphs using coordinates and gradients, and learn to write equations in the form y=mx+cy = mx + cy=mx+c, which represents the relationship between variables in linear contexts. **Probability from Tree Diagrams and Venn Diagrams:** Students analyse probability distributions using tree diagrams to illustrate independent	measures of central tendency such as mean, median, and mode, and understand how to determine the spread of data using the range, enabling them to analyse and interpret data sets effectively. **Transformation of 2D Shapes:** Students explore transformations including translations, rotations, reflections, and enlargements of 2D shapes, understanding how these transformations affect position, size, and orientation in the coordinate plane. **Introduction to Surds:** Students are introduced to surds (square roots of non-perfect squares) and learn how to simplify expressions involving surds and perform basic operations, preparing them for more advanced algebraic manipulations. **Sector Area and Arc Length:** Students learn to calculate the area of sectors and the length of arcs in circles, applying formulas $\text{Area of Sector} = \frac{\theta}{360^\circ}\pi r^2$ $\text{Arc Length} = \frac{\theta}{360^\circ} \times 2\pi r$ and understanding their applications in geometry and real-world contexts.

	triangles, where $a^2 + b^2 = c^2$, enabling them to find unknown side lengths when given two sides, fundamental for geometry and applications in real-world contexts. **Trigonometry:** Students are introduced to sine, cosine, and tangent functions in right-angled triangles, understanding how to use these ratios to find missing angles and sides, preparing them for more advanced trigonometric concepts in later years.	and conditional events, and use Venn diagrams to visualise and calculate probabilities involving set intersections and unions.	
Year 10 Foundation	**Trigonometry:** Students will explore trigonometric ratios (sine, cosine, tangent) and their applications in solving triangles and real-world problems involving angles and distances. **Simultaneous Equations:** This topic covers methods for solving systems of equations simultaneously, including substitution, elimination, and graphical methods. **Expanding and Factorising Quadratic Expressions:** Students will learn techniques to expand and factorise quadratic expressions, including identifying and using patterns such as the difference of squares. . **Nth Term of Linear Sequences:** This topic focuses on identifying and deriving	**Transformation of Shapes:** Students will explore transformations including translations, rotations, reflections, and enlargements. They will learn how to apply transformation rules to geometric figures. **Probability:** This topic introduces students to the concept of probability, exploring theoretical and experimental probabilities. They will learn to calculate probabilities of events, understand concepts such as independent and dependent events, and apply probability in real-life situations. **Straight Line Graphs:** Students will study the properties and equations of straight line graphs, including gradient and intercept forms. They will learn to interpret graphs, calculate slopes, determine equations of lines.	**Ratio:** Students will learn about ratios as comparisons of two quantities and how to simplify and express them in different forms. They will apply ratio concepts to solve problems involving proportions, scaling, and mixing of ingredients. **Percentage Problems:** This topic covers the use of percentages in various contexts such as discounts, interest calculations, and proportions. Students will learn techniques to calculate percentages, solve percentage change problems, and apply percentages in real-world scenarios. **Real Life Word Problems:** Students will tackle word problems that reflect real-life situations across different mathematical topics. They will develop skills in interpreting problems, identifying relevant information, and applying appropriate mathematical methods to find solutions.

	formulas for the nth term of linear sequences. **Bounds:** Students will explore the concept of upper and lower bounds in measurement and calculations, learning to estimate and determine bounds to ensure accuracy in their answers. **Angles on Parallel Lines:** This topic covers the properties of angles formed when a transversal intersects parallel lines. Students will learn about corresponding angles, alternate angles, interior angles, and angles in a triangle, applying these rules to solve problems involving geometric shapes and structures.	**Area and Volume:** Students will explore the concepts of area and volume for various geometric shapes, including rectangles, triangles, circles, prisms, pyramids, cylinders, and spheres. They will learn to calculate areas of 2D shapes and volumes of 3D solids using appropriate formulas, and apply these concepts in practical contexts.	**Mock Exam Preparation:** In preparation for exams, students will engage in mock exams designed to simulate the format and conditions of actual assessments. They will practice time management, revise key concepts and skills, and receive feedback to improve their exam performance. **Averages:** Students will learn to calculate and interpret mean, median, and mode. They will apply these concepts to analyze data sets, understand their significance in representing typical values, and solve real-world problems. **Statistical Diagrams:** This topic covers the interpretation and construction of various statistical diagrams including bar charts, pie charts,frequency polygons and line graphs. Students will learn to choose appropriate diagrams based on data characteristics, interpret graphical representations, and draw conclusions from visual data presentations.

Year 10 Higher	**Surds** The curriculum covers the fundamental concept of surds, including their definition and significance, along with techniques for simplifying them. Students will also learn the rules for performing arithmetic operations with surds and methods for rationalising the denominator to simplify expressions further. **Quadratic Equations:** This topic covers solving quadratic equations using methods such as factoring, completing the square, and the quadratic formula. Students will also explore the graphical representation of quadratic functions and their applications in real-world problems. **Evaluating with Indices, Including Fractional and Negative:** Students will learn to evaluate expressions involving indices, including those with fractional and negative exponents. Emphasis will be on understanding the laws of exponents and applying them to simplify complex algebraic expressions. **Trigonometry:** The curriculum introduces the fundamental concepts of trigonometry, focusing on the relationships between the sides and angles of all types of triangles. Students will study trigonometric ratios, their applications in solving triangles, and real-world problems involving heights and distances.	**Transformation of Shapes:** Students will explore various transformations including translations, reflections, rotations, and enlargements. They will learn to apply transformation rules to shapes on coordinate grids and understand how transformations preserve properties such as size, shape, and orientation. **Bounds:** This topic covers the concept of upper and lower bounds in the context of measurements and calculations. Students will practice estimating and determining bounds to ensure accuracy in their calculations and interpretations. **Circle Theorems:** Students will study fundamental theorems related to circles, including properties of angles formed by chords, tangents, and secants. They will apply these theorems to solve problems involving circle geometry **Iteration:** Iteration involves repetitive processes used to find solutions to equations or problems. **Functions:** This topic introduces the concept of functions as mathematical relationships between inputs and outputs. Students will learn to work with composite functions.	**Recurring Decimal Proof:** Students will delve into the concept of recurring decimals and learn methods to convert them into fractions.rsions. **Data Handling:** This topic involves collecting, organizing, analyzing, and interpreting data to draw meaningful conclusions. **Velocity Time Graph:** Students will study the relationship between velocity and time through graphical representation. They will learn to interpret velocity-time graphs, calculate acceleration and distance traveled. **Direct Inverse Proportion:** This topic explores the relationships between quantities where one increases as the other decreases (inverse proportion) or both increase or decrease together (direct proportion). Students will learn to formulate equations and solve problems involving proportional relationships. **Similar Shapes:** Students will explore the properties of similar shapes, understanding how corresponding angles are equal and corresponding sides are in the same ratio. They will apply similarity criteria and properties to solve problems.

	Quadratic and Geometric Sequences: This topic explores the properties and formulas of quadratic sequences, helping students to identify patterns and find the nth term. Students will also study geometric sequences, applying these concepts to solve practical problems.		**Mock Exam Preparation:** In preparation for exams, students will engage in mock exams designed to simulate the format and conditions of actual assessments. They will practice time management, revise key concepts and skills, and receive feedback to improve their exam performance. **Feedback and recap of key topics:**
Year 11 Foundation	**Probability Tree and Venn Diagrams:** Students will explore probability using tree diagrams to represent sequential events and Venn diagrams to illustrate relationships between sets of events. **Interior and Exterior Angles in Polygons:** This topic covers the properties of polygons, focusing on the sum of interior and exterior angles. Students will learn formulas to calculate these angles for different types of polygons, including regular and irregular shapes, and apply their understanding in geometric constructions and problem-solving. **Bearings:** Students will learn the concept of bearings as a method to describe directions in navigation and surveying. They will understand how to measure and calculate bearings relative to fixed points, and apply bearings in practical situations involving maps, compass directions, and	**Construction and Loci:** Students will learn construction techniques using a straightedge and compass to create geometric figures such as perpendicular bisectors, angle bisectors, and triangles. They will also explore loci, understanding how points satisfying specific conditions form geometric shapes, and apply these concepts to solve problems in geometry. **Vectors:** This topic introduces vectors as quantities with both magnitude and direction. Students will learn vector notation, addition, subtraction and scalar multiplication. **Ratio Problems:** Students will explore ratios as comparisons between quantities and learn to solve problems involving proportions, scaling, mixing ingredients, and financial calculations. **Revision starts**	Revision continues

	real-world applications. **Mock 1 Exam Preparation:** In preparation for exams, students will engage in mock exams designed to simulate the format and conditions of actual assessments. They will practice time management, revise key concepts and skills, and receive feedback to improve their exam performance.		
Year 11 Higher	**Linear Inequalities and Regions:** Students will study linear inequalities and their graphical representations to understand regions of solutions. They will learn methods to solve and interpret inequalities, including shading regions on coordinate planes and determining feasible solution sets. **Similarity and Congruence:** This topic explores the properties of similar and congruent shapes, including identifying corresponding angles and sides. Students will learn criteria for determining similarity and congruence, applying these concepts in geometric proofs and real-world scenarios. **Equation of a Circle:** Students will learn to apply the equation of a circle. They will explore how the center and radius of a circle are represented algebraically	**Trigonometric Graphs:** Students will explore the graphs of trigonometric functions such as sine, cosine, and tangent. They will learn to interpret amplitude, period, phase shift, and vertical shift. **Exponential and Reciprocal Graphs:** This topic covers the graphs of exponential functions and reciprocal functions. Students will study characteristics such as growth and decay rates, asymptotes, and transformations of these graphs, applying them to model real-world phenomena and solve equations. **Transformation of Graphs:** Students will learn how to transform the graphs of functions through translations, reflections, stretches, and compressions. They will apply these transformations to functions such as quadratic, exponential, and trigonometric graphs, analysing changes in their shapes and positions.	Revision

	and use these equations to solve problems involving circles in coordinate geometry. **Vectors:** This topic introduces vectors as quantities with magnitude and direction, and covers operations such as addition, subtraction, scalar multiplication, and calculation of magnitudes and directions. **Mock Exam Preparation:** In preparation for exams, students will engage in mock exams designed to simulate the format and conditions of actual assessments. They will practice time management, revise key concepts and skills, and receive feedback to improve their exam performance.	**Volume and Surface Area of Spheres and Cones:** This topic focuses on calculating the volume and surface area of spheres and cones using appropriate formulas. Students will apply these formulas to solve problems involving three-dimensional objects in geometry and practical applications. **Exact Trig Values:** Students will learn to determine exact values of trigonometric functions for special angles (0°, 30°, 45°, 60°, 90°) using trigonometric identities and reference angles. They will apply these values to solve trigonometric equations and verify identities in various contexts.	
Year 12	**Pure maths:** Binomial expansion Circles Polynomials and factor theorem **Mechanics:** Modelling in mechanics. Constant acceleration. **Statistics:** Measures of location and spread Representation of data	**Pure maths:** Trigonometric ratios Trigonometric identities and equations Exponentials and logarithms **Mechanics:** Forces and motion Variable acceleration **Statistics:** Correlation Probability	**Pure maths:** Vectors Differentiation Integration Functions and graphs **Mechanics:** Moments **Statistics:** Statistical distributions Hypothesis testing
Year 13	**Pure maths:** Algebraic methods Sequences and series Binomial expansion Radians Trigonometric functions Trigonometry and modelling	**Pure maths:** Parametric equations Differentiation Numerical methods Integration **Mechanics:** Application of forces	**Pure maths:** Vectors **Mechanics:** Further kinematics Revision

	Mechanics: Forces and friction Projectiles **Statistics:** Regression correlation and hypothesis testing Conditional probability	**Statistics:** Normal distribution	

Below are the assessments for both GCSE and A level

GCSE maths: 3 papers
Paper 1 : non calculator (90 minutes)
Paper 2: calculator (90 minutes)
Paper 3: calculator (90 minutes)

GCSE Higher : Edexcel
GCSE Foundation : AQA

A level: Edexcel

Paper 1 and 2: Pure (each paper is 2 hours)
Paper 3: Mechanics and Statistics (2 hours)