

Curriculum Overview 2022-23 Mathematics

Curriculum overview for Year 7

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p>Curriculum Content:</p> <p>Priority Essential knowledge and skills that will be taught.</p>	<p>Key Knowledge: Sequences</p> <ul style="list-style-type: none"> Predict and check the next term(s) of a sequence. Recognise the difference between linear and non-linear sequences Find missing numbers within sequences <p>Algebraic notation</p> <ul style="list-style-type: none"> Use diagrams and letters to generalise number operations Substitute values into expressions Generate sequences given an algebraic rule <p>Equality and equivalence</p> <ul style="list-style-type: none"> Simplify expressions by collecting like terms Use algebraic methods to solve linear equations 	<p>Key Knowledge: Place value, ordering decimals and integers</p> <ul style="list-style-type: none"> understand and use place value for decimals, measures and integers of any size order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, ≤, ≥ round numbers to an appropriate degree of accuracy <p>Fraction, decimal & percentage equivalence</p> <ul style="list-style-type: none"> Convert fluency between fractions, decimals and percentages Understand the meaning of percentage Use and interpret pie charts 	<p>Key Knowledge: Applications of number</p> <ul style="list-style-type: none"> Solve problems involving perimeter Recognise and use relationships between operations including inverse. Change freely between standard units of measure Factors, multiples, Highest common factor and lowest common multiple. <p>Fractions & Percentages of an amount</p> <ul style="list-style-type: none"> Express one quantity as a fraction of another Compare two quantities using percentages Work with percentages greater than 100 	<p>Key Knowledge: Directed number</p> <ul style="list-style-type: none"> Add, subtract, multiply and divide directed numbers. Perform calculations that cross zero Evaluate expressions with directed numbers. Introduction to two-step equations <p>Addition & subtraction of fractions</p> <ul style="list-style-type: none"> Convert between mixed numbers and fractions Use and understand equivalent fractions Add and subtract fractions including mixed number 	<p>Key Knowledge: Lines & angles</p> <ul style="list-style-type: none"> Measure and draw angles up to 360° Identify parallel and perpendicular lines Recognise different types of triangles, quadrilaterals and polygons up to a decagon. Construct triangles <p>Geometric notation</p> <ul style="list-style-type: none"> Understand the sum of angles on a straight line, at a point, in a triangle and a quadrilateral. Solve angle problems using triangles and quadrilaterals Understand and use the equality of vertically opposite angles 	<p>Key Knowledge: Developing number sense</p> <ul style="list-style-type: none"> Students extend their understanding of the number system to include decimals, fractions, powers and roots. Reason deductively in number and algebra <p>Probability</p> <ul style="list-style-type: none"> Students learn about sets, set notation and systematic listing strategies Generate sample space diagrams for single and combined events <p>Primes & Proof</p> <ul style="list-style-type: none"> Use the concepts of multiples, common factors, common multiples, highest common factor, lowest common factor and prime factorisation Use integer powers and associated real roots (square, cube and higher).

	<p>Skills</p> <ul style="list-style-type: none"> • Make and test conjectures • Recognise and use inverse operations 	<p>Skills:</p> <ul style="list-style-type: none"> • Move freely between different numerical representations 	<p>Skills:</p> <ul style="list-style-type: none"> • Use the associative law to simplify calculations • Interpret money on a calculator 	<p>Skills:</p> <ul style="list-style-type: none"> • Develop fluency in FDP conversions 	<p>Skills:</p> <ul style="list-style-type: none"> • Develop skills using a protractor 	<ul style="list-style-type: none"> • Recognise powers of 2, 3, 4 and 5 <p>Skills:</p> <ul style="list-style-type: none"> • Begin to reason deductively in number and algebra • Make and test conjectures.
Assessment	Students will complete an end of topic assessment at the end of each unit. Assessments will also cover content previously taught from the curriculum in the previous year/s. This will then be reflected on and improved by students.					
	End of topic tests x3	End of topic tests x2	End of topic tests x2	End of topic tests x2	End of topic tests x2	End of topic tests x2
		Autumn end of term assessment		Spring end of term assessment		Summer end of term assessment

Curriculum overview for Year 8

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p>Curriculum Content:</p> <p>Priority Essential knowledge and skills that will be taught.</p>	<p>Key Knowledge:</p> <p>Ratio and scale</p> <ul style="list-style-type: none"> Use scale factors, scale diagrams and maps Share in a ratio Solve problems involving direct and inverse proportion <p>Multiplicative change</p> <ul style="list-style-type: none"> Use of scale factors for similar shapes Currency conversions Proportion graphs <p>Multiplying and dividing fractions</p> <ul style="list-style-type: none"> Multiplication and division of fractions by integers and fractions. 4 operations including mixed number fractions both positive and negative 	<p>Key Knowledge:</p> <p>Cartesian plane</p> <ul style="list-style-type: none"> Work with coordinates in all four quadrants Identify and draw lines that are parallel to the axes Draw lines of $y=x$ and $y=kx$ Plot graphs in the form of $y = mx + c$ <p>Representing data</p> <ul style="list-style-type: none"> Draw and interpret scatter graphs Read and interpret grouped and ungrouped frequency tables Identify different types of data Represent data in two-way tables <p>Tables and probability</p> <ul style="list-style-type: none"> Find probabilities from Venn diagrams, sample space and two-way tables Construct sample space diagrams 	<p>Key Knowledge:</p> <p>Brackets, equations and inequalities</p> <ul style="list-style-type: none"> Form algebraic expressions Multiply out and factorise a single bracket Form and solve equations with brackets Form and solve inequalities <p>Sequences</p> <ul style="list-style-type: none"> Generate sequences from words and given an algebraic rule. Find the nth term <p>Indices</p> <ul style="list-style-type: none"> Using the addition and subtraction law for indices Simplify expressions by multiplying and dividing indices 	<p>Key Knowledge:</p> <p>Fractions and percentages</p> <ul style="list-style-type: none"> Calculate percentage increase and decrease using a multiplier Convert between decimals and percentages greater than 100% Express one number as a fraction or a percentage of another without a calculator <p>Standard index form</p> <ul style="list-style-type: none"> Investigate positive and negative powers of 10 Work with numbers greater than 1 and between 0 and 1 in standard form Compare and order numbers in standard form Add and subtract, multiply and divide numbers in standard form Use a calculator to work with numbers in standard form <p>Number sense</p> <ul style="list-style-type: none"> Round numbers to a given number of decimal places 	<p>Key Knowledge:</p> <p>Angles in parallel lines and polygons</p> <ul style="list-style-type: none"> Understand and use basic angles rules and notation Investigate angles between parallel lines and the transversal Identify and calculate with co-interior, alternate and corresponding angles Calculate and use the sum of the interior angles in any polygon Calculate missing interior angles in regular polygons <p>Area of trapezia and circles</p> <ul style="list-style-type: none"> Calculate the area of triangles, rectangles parallelograms and trapezia Calculate the perimeter and area of compound shapes Calculate the area of a circle and parts of a circle. 	<p>Key Knowledge:</p> <p>The data handling cycle</p> <ul style="list-style-type: none"> Design and criticise questionnaires Draw and interpret pictograms, bar charts and vertical line charts Draw and interpret multiple bar charts, pie charts and line graphs <p>Measures of location</p> <ul style="list-style-type: none"> Understand and use the mean, median and mode Find the mean from grouped and an ungrouped frequency table Identify outliers Compare distributions using averages and the range

	<p>Skills:</p> <ul style="list-style-type: none"> Bar modelling skills 	<p>Skills:</p> <p>Listing outcomes systematically</p>	<p>Skills:</p> <ul style="list-style-type: none"> Collecting like terms and expanding brackets 	<ul style="list-style-type: none"> Estimate the answer to a calculation Understand and use error interval notation <p>Skills:</p> <ul style="list-style-type: none"> Writing divisions as fractions 	<p>Line symmetry and reflection</p> <ul style="list-style-type: none"> Reflect a shape in a horizontal, vertical or diagonal line <p>Skills:</p> <ul style="list-style-type: none"> Calculate and solve problems involving perimeters of 2-D shapes 	<p>Skills:</p> <ul style="list-style-type: none"> Test a hypothesis
Assessment	Students will complete an end of topic assessment at the end of each unit. Assessments will also cover content previously taught from the curriculum in the previous year/s. This will then be reflected on and improved by students.					
	End of topic tests x3	End of topic tests x3	End of topic tests x3	End of topic tests x3	End of topic tests x3	End of topic tests x2
		Autumn end of term assessment		Spring end of term assessment		Summer end of term assessment

Curriculum overview for Year 9

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p>Curriculum Content:</p> <p>Priority Essential knowledge and skills that will be taught.</p>	<p>FOUNDATION Key Knowledge:</p> <p>Arithmetic</p> <ul style="list-style-type: none"> Add, subtract, multiply and divide using formal methods, including with decimals. Add, subtract, multiply and divide with negative numbers Solve worded problems <p>Powers and roots</p> <ul style="list-style-type: none"> Recognise, find and use powers and roots Use the order of operations to solve calculations Apply the laws of indices <p>Fractions, decimals and percentages</p> <ul style="list-style-type: none"> Convert between a mixed number and an improper fraction Add, subtract, multiply and divide with fractions. Find and compare equivalent fractions, decimals and percentages. 	<p>FOUNDATION Key Knowledge:</p> <p>Algebraic manipulation</p> <ul style="list-style-type: none"> Simplify expressions by collecting like terms, including powers Substitute positive and negative integers into expressions and formulae Simplify expressions involving multiplication and division Expand brackets and factorise <p>Coordinates and graphs</p> <ul style="list-style-type: none"> Plot and read x and y coordinates in all four quadrants. Find the midpoint of two points Identify the equations of lines and plot coordinates from a rule to generate a straight line 	<p>FOUNDATION Key Knowledge:</p> <p>2D Shapes</p> <ul style="list-style-type: none"> Identify the symmetries and classify all 2D shapes Apply the properties of shapes to find missing angles Apply the sum of angles at a point, on a straight line and in a triangle Find the area of triangles Find the missing length of a shape when given the area <p>3D Shapes</p> <ul style="list-style-type: none"> Recognise and complete the nets of 3D shapes Construct and interpret plans and elevations of 3D shapes Calculate the volume and surface area of cuboids and solve problems involving these Calculate the volume of prisms 	<p>FOUNDATION Key Knowledge:</p> <p>Solving equations</p> <ul style="list-style-type: none"> Solve one-step and two-step linear equations Solve linear equations with one unknown on one side including brackets and fractions Construct and solve simple linear equations with integer coefficients and unknown on one side Write equations from a problem or area and perimeter of shapes <p>Probability</p> <ul style="list-style-type: none"> Use the terms likely, equally likely, fair, unfair, certain when describing chance or likelihood Place theoretical probabilities accurately on the probability scale I can find probabilities and apply the property that the probabilities of mutually exclusive outcomes sum to 1 Complete sample spaces for combined events with equally likely outcomes and calculate probabilities from these Read and complete Venn diagrams 	<p>FOUNDATION Key Knowledge:</p> <p>Sequences</p> <ul style="list-style-type: none"> Continue a sequence and find missing terms within a sequence Find the term-to-term rule of a sequence Find the next term of a diagrammatic sequence Recognise and continue recursive (Fibonacci-type) sequences Find the nth term of a linear sequence <p>Percentages</p> <ul style="list-style-type: none"> Find a percentage of a quantity Perform a percentage increase or decrease Solve a percentage change problem given in context Find the percentage change 	<p>FOUNDATION Key Knowledge:</p> <p>Proportion</p> <ul style="list-style-type: none"> Find the cost of items by using the unitary method Solve best value problems Use proportion to adapt a recipe and use this to solve problems Solve direct proportion problems Solve simple inverse proportion problems <p>Constructions, loci and bearings</p> <ul style="list-style-type: none"> Accurately draw diagrams from written descriptions Accurately construct triangles from ASA, SAS and SSS information Use a ruler and compass to construct a perpendicular bisector of a line Use a ruler and compass to construct an angle bisector

	<p>Skills: Numeracy Using equivalence to compare values and solve problems</p> <p>HIGHER Key Knowledge:</p> <p>Arithmetic</p> <ul style="list-style-type: none"> • Use formal written methods to divide integers and decimals by an integer • and to divide an integer by a decimal. • Use formal written methods to divide a decimal by a decimal and solve worded problems. • Add, subtract, multiply and divide positive and negative integers • I can multiply and divide. Solve problems including negative numbers <p>Powers and Roots</p> <ul style="list-style-type: none"> • Use the index laws for multiplication and division of integer powers • Simplify expressions involving sums, products and powers, 	<p>Skills: Algebraic manipulation Plotting and identifying equations of graphs</p> <p>HIGHER Key Knowledge:</p> <p>Algebraic manipulation</p> <ul style="list-style-type: none"> • Simplify expressions including powers • Substitute positive and negative integers into expressions and formulae, including with powers • Expand and factorise multiple single brackets • Expand and factorise a quadratic expression • Complete the square on an algebraic expression <p>Coordinates and graphs</p> <ul style="list-style-type: none"> • Solve complex problems on a coordinate grid • Plot and interpret graphs • Identify the equation of a linear graph • Use the form $y = mx + c$ to identify parallel and perpendicular lines • Find the equation of a line through two given points 	<p>Skills: Apply understanding of geometry to solve problems</p> <p>HIGHER Key Knowledge:</p> <p>2D Shapes</p> <ul style="list-style-type: none"> • Use Pythagoras's theorem to find a missing length in right-angled triangles and apply Pythagoras' theorem to solve real life problems • Use the trigonometric ratios to find a missing length in a right-angled triangle and to find a missing angle in a right-angled triangle • Solve problems using Pythagoras's theorem and trigonometry <p>3D Shapes</p> <ul style="list-style-type: none"> • Calculate the volume and surface area of prisms including cylinders, pyramids, spheres and cones, and solve problems involving these • Apply formulae to calculate the surface area of a cone involving Pythagoras 	<p>Skills: Solving equations. Understanding and applying the rules of probability.</p> <p>HIGHER Key Knowledge:</p> <p>Solving equations</p> <ul style="list-style-type: none"> • Construct and solve linear equations with one unknown on both sides • Write simple equations from a problem or area and perimeter of shapes • Change the subject of a formula • Solve quadratic equations containing x^2 by factorising • Solve two linear simultaneous equations in two variables algebraically <p>Probability</p> <ul style="list-style-type: none"> • Apply the property that the probabilities of mutually exclusive outcomes sum to 1 and reverse a given probability to find possible outcomes • Complete sample spaces for combined events with equally likely outcomes and calculate probabilities from these 	<p>Skills: Applying number and algebra skills to solve problems involving sequences and percentages. Solve real-life problems involving percentages.</p> <p>HIGHER Key Knowledge:</p> <p>Sequences</p> <ul style="list-style-type: none"> • Use the nth term of a linear sequence to solve a problem • Find the nth term of a linear diagrammatic sequence • Find the nth term of any quadratic sequence • Find the nth term of a diagrammatic quadratic sequence • Find and use the nth term of geometric sequences <p>Percentages</p> <ul style="list-style-type: none"> • Find percentage change • Find the overall percentage change after repeated percentage changes • Identify and work with fractions and percentages in problems 	<p>Skills: Using proportion skills to solve real-life problems. Using the physical skills of manipulating a compass, protractor and ruler to accurately construct diagrams.</p> <p>HIGHER Key Knowledge:</p> <p>Proportion</p> <ul style="list-style-type: none"> • Solve best value problems • Use proportion to adapt a recipe and use this to solve problems • I can solve direct and inverse proportion problems • Apply statistics to describe a population • Apply statistics to a capture and recapture problem <p>Constructions, loci and bearings</p> <ul style="list-style-type: none"> • Use a ruler and compass to construct a perpendicular bisector of a line, perpendicular to a given line from a given point, an angle bisector and to solve complex loci problems • Use scale factors, diagrams and maps • Construct and measure bearings on diagrams
--	---	--	--	---	---	---

	<p>including using index laws</p> <ul style="list-style-type: none"> • Calculate with fractional indices, negative indices and surds • Convert between ordinary numbers and standard form • Multiply, divide, add and subtract with numbers written in standard form • Solve worded problems involving numbers written in standard form <p>Fractions, Decimals and Percentages</p> <ul style="list-style-type: none"> • Add, subtract, multiply and divide mixed numbers and improper fractions • Order fractions, decimals and percentages • Convert fractions into recurring decimals and change recurring decimals into fractions <p>Skills: Numeracy Problem solving</p>	<p>Skills: Algebraic manipulation Problem solving with linear graphs</p>	<ul style="list-style-type: none"> • Apply formulae to calculate the surface area of a composite solids <p>Skills: Geometric problem solving in 2D and 3D</p>	<ul style="list-style-type: none"> • Calculate probabilities from a two-way table • Complete and find probabilities from Venn diagrams, including when the intersection needs to be calculated • Interpret the frequency of outcomes of probability experiments from tables and find relative frequency from these <p>Skills: Solving equations. Understanding and applying the rules of probability.</p>	<ul style="list-style-type: none"> • Solve original value problems • Calculate simple interest • Calculate compound interest • Set up, solve and interpret the answers in growth and decay <p>Skills: Applying algebra skills to sequence problems. Solve real-life problems involving percentages.</p>	<ul style="list-style-type: none"> • I can solve bearing problems including Pythagoras and right-angled trigonometry <p>Skills: Using proportion skills to solve real-life problems. Using the physical skills of manipulating a compass, protractor and ruler to accurately construct diagrams.</p>
--	---	---	---	---	--	--

Assessment	End of topic tests x3	End of topic tests x2 Autumn term progress test.	End of topic tests x2	End of topic tests x2	End of topic tests x2	End of topic tests x2 End of year GCSE Paper 1 - Foundation
------------	-----------------------	---	-----------------------	-----------------------	-----------------------	--

Curriculum overview for Year 10

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p>Curriculum Content:</p> <p>Priority Essential knowledge and skills that will be taught.</p>	<p>FOUNDATION Key Knowledge:</p> <p>Rounding and error intervals</p> <ul style="list-style-type: none"> Round to the nearest whole number, to a given number of decimal places and to a given number of significant figures Begin to understand the concept of bounds when rounding to the nearest 10, 100 and 1000 Use rounding to significant figures to estimate in simple problems Estimate roots <p>Percentages</p> <ul style="list-style-type: none"> Find a percentage of a quantity Perform a percentage increase or decrease Solve a percentage change problem given in context 	<p>FOUNDATION Key Knowledge:</p> <p>Ratio and proportion</p> <ul style="list-style-type: none"> Reduce a ratio to its simplest form including with different units Divide into a ratio when given the share or total Identify the relationship between ratios and fractions Find the cost of items by using the unitary method Solve best value problems Use proportion to adapt a recipe and use this to solve problems Solve direct proportion problems <p>Perimeter and Area</p> <ul style="list-style-type: none"> Find the perimeter and area of rectangles and shapes made from rectangles and solve functional problems by finding the area or perimeter of compound 	<p>FOUNDATION Key Knowledge:</p> <p>Angles and bearings</p> <ul style="list-style-type: none"> Apply the sum of angles at a point, on a straight line and in a triangle Find unknown angles in a triangle and quadrilateral Apply the properties of quadrilaterals to find missing angles Use alternate, corresponding and co-interior angles to find a missing angle on a parallel line Find unknown interior angles in any regular or irregular polygon Construct and measure bearings on diagrams Calculate return bearings <p>Drawing graphs</p> <ul style="list-style-type: none"> Plot coordinates from a rule to generate a straight line 	<p>FOUNDATION Key Knowledge:</p> <p>Transformations</p> <ul style="list-style-type: none"> Carry out transformations on 2D shapes on a coordinate grid Find a missing side length in two shapes that are similar Construct similar shapes by enlargement of a positive integer scale factor from a given point on a coordinate grid Identify and describe which transformation has occurred <p>Straight line graphs</p> <ul style="list-style-type: none"> Find the midpoint of two points and the endpoint when given the midpoint and one endpoint Identify the gradient of a linear graph from the equation and the graph Identify the equation of a linear graph from the graph 	<p>FOUNDATION Key Knowledge:</p> <p>Compound measures</p> <ul style="list-style-type: none"> Read and interpret speed-time graphs and distance-time graphs Convert compound units Calculate speed, distance and time where units need converting Calculate density, mass and volume Calculate density, mass and volume where units need converting Calculate pressure, force and area <p>Probability</p> <ul style="list-style-type: none"> Find probabilities based on equally likely outcomes in simple contexts and apply the property that the probabilities of mutually exclusive outcomes sum to 1 	<p>FOUNDATION Key Knowledge:</p> <p>Averages and the range</p> <ul style="list-style-type: none"> Find the mode, median, mean and range from a list of data and identify the appropriate average to use in a given situation Adjust the mean when data is added or taken away from the set Find the mode, range, median and mean from a stem and leaf diagram and a discrete frequency table Find the modal class, class in which the median lies and estimated mean from a grouped frequency table Compare distributions of grouped, discrete or continuous data using mean, mode, median and range <p>Skills: Use number and algebra skills to solve real-life</p>

	<ul style="list-style-type: none"> • Find the percentage change • Identify and work with fractions and percentages in problems <p>Skills: Simplify and check problems by rounding. Apply understanding of percentages to real-life scenarios.</p>	<p>shapes made from rectangles</p> <ul style="list-style-type: none"> • Find the area of parallelograms and triangles • Find the missing length of a shape when given the area • Find the area of trapeziums and compound shapes • Calculate the circumference and area of a circle <p>Volume and surface area</p> <ul style="list-style-type: none"> • Calculate the volume and surface area of prisms and cylinders and solve problems involving these • Apply the formulae to calculate the volume of a pyramid, a sphere or hemisphere • Apply the formulae to calculate the surface area of a sphere, hemisphere or cone <p>Skills: Using proportion skills to solve real-life problems. Solving geometric problems.</p>	<ul style="list-style-type: none"> • Use a table of values to plot graphs of simple linear functions • Plot graphs of quadratic functions • Plot graphs of quadratic, cubic, reciprocal and exponential functions <p>Skills: Applying bearings and angles skills to solve problems. Apply skills learned the sequences unit to draw graphs of functions.</p>	<ul style="list-style-type: none"> • Find the equation of a line when given the gradient (or parallel line) and a point • Find the equation of a line through two given points <p>Skills: Working on a coordinate grid using both geometric and algebraic skills.</p>	<ul style="list-style-type: none"> • Complete sample spaces for combined events with equally likely outcomes and calculate probabilities from these • Reverse a given probability to find possible outcomes • Find the probability of A and B occurring and the probability of A or B occurring • Calculate expected outcomes of future experiments by applying relative frequency • Complete and find probabilities from Venn diagrams, including when the intersection needs to be calculated • Complete probability tree diagrams and find probabilities of combined events from these <p>Skills: Applying mathematical skills to real-life scenarios involving the movement of objects and properties of materials. Applying mathematical skills to real-life scenarios involving probability.</p>	<p>problems involving probability,</p>
--	--	--	--	--	---	--

	<p>HIGHER Key Knowledge:</p> <p>Surds and Indices</p> <ul style="list-style-type: none"> Calculate with fractional and negative indices, including integers and fractions Solve complex indices problems calculate exactly with surds Simplify expressions involving surds Find and use the nth term of geometric sequences Expand double brackets with surds <p>Drawing graphs and graphing inequalities</p> <ul style="list-style-type: none"> Identify the equation of a linear graph from the graph and when given the gradient (or parallel line) and a point or through two given points Use the form $y = mx + c$ to identify parallel and perpendicular lines Plot graphs of quadratic, cubic, reciprocal and exponential functions 	<p>HIGHER Key Knowledge:</p> <p>Solving Quadratics</p> <ul style="list-style-type: none"> Expand and factorise the f two or more binomials Solve quadratic equations using the quadratic formula and completing the square Find approximate solutions to quadratic equations using a graph Solve quadratic inequalities in one variable and represent the solution of a quadratic inequality on a graph <p>Arcs and sectors</p> <ul style="list-style-type: none"> Solve functional problems by finding the area or perimeter of compound shapes including parts of circles Find the radius or diameter of a circle when given the circumference or area Calculate the area of sectors and the length of an arc Solve problems involving lengths of circular arcs or area of sectors and the perimeter of a sector when given the area or the area when given the perimeter <p>Circle theorems</p>	<p>HIGHER Key Knowledge:</p> <p>Similarity and congruence</p> <ul style="list-style-type: none"> Use the basic congruence criteria for triangles Prove two triangles are congruent Find a missing side length in two shapes that are similar in the context of a problem Apply the concepts of similarity, including the relationships between lengths, areas and volumes in similar figures Prove two triangles are similar <p>Complex transformations of shapes</p> <ul style="list-style-type: none"> Carry out standard transforms of 2D shapes by translating, reflecting, rotating on a coordinate grid Identify and describe which transformation has occurred Construct similar shapes by enlargement of a positive or negative integer or fractional scale factor from a given point on a coordinate grid Perform and describe combinations of transformations on a coordinate grid 	<p>HIGHER Key Knowledge:</p> <p>Conditional probability</p> <ul style="list-style-type: none"> Use the product rule for counting Calculate probabilities from a two-way table, including conditional probabilities, and a Venn diagram, including when the intersection needs to be calculated Complete probability tree diagrams and find probabilities of combined events from these, with and without replacement and find probabilities of combined events from these Form and solve equations from probability problems <p>Volume and algebra</p> <ul style="list-style-type: none"> Solve complex problems on a coordinate grid Plot and interpret graphs Identify the equation of a linear graph Use the form $y = mx + c$ to identify parallel and perpendicular lines Find the equation of a line through two given points <p>Bounds and compound measures</p> <ul style="list-style-type: none"> Use inequality notation to specify simple error intervals due to rounding 	<p>HIGHER Key Knowledge:</p> <p>Graphs of circles</p> <ul style="list-style-type: none"> Recognise and interpret the equation of a circle with centre at the origin Calculate whether a given point lies inside, on or outside a circle Solve problems using the equation of a circle Find the equation of a tangent to a circle at a given point Solve problems including find the equation of a tangent to a circle at a given point <p>Linear and quadratic simultaneous equations</p> <ul style="list-style-type: none"> Form and solve two linear simultaneous equations in two variables algebraically and graphically Solve two simultaneous equations (one linear, one quadratic) algebraically and graphically 	<p>HIGHER Key Knowledge:</p> <p>Histograms, cumulative frequency and box plots</p> <ul style="list-style-type: none"> Interpret and calculate quartiles and interquartile range Find the interquartile range from a stem and leaf diagram Construct and complete box plots Interpret box plots Make comparisons between two distributions using box plots Construct and interpret cumulative frequency diagrams Estimate from a histogram Apply statistics to describe a population Apply statistics to a capture and recapture problem
--	--	--	--	---	---	--

	<p>Skills: Numeracy and its applications Converting between visual and abstract representations of algebra</p>	<ul style="list-style-type: none"> Recognise and name the parts of a circle Identify the standard circle theorems and match them to their correct statements Use the standard circle theorems to find a missing angle Apply the standard circle theorems to find a missing angle in a complex problem Prove the standard circle theorems <p>Skills: Algebraic manipulation Geometric reasoning and problem solving</p>	<p>Skills: Geometric reasoning and problem solving</p>	<p>and to specify simple error intervals due to truncation</p> <ul style="list-style-type: none"> Find upper and lower bounds in simple problems Convert compound units (e.g. m/s to km/h) Calculate speed, distance and time where units need converting Calculate density, mass and volume where units need converting and solve density mass and volume problems involving mixing materials Calculate pressure, force and area <p>Skills: Applying mathematics to real world problems involving probability, geometry and mechanics</p>	<p>Skills: Applying abstract algebra skills to solve mathematical problems</p>	<p>Skills: Statistical analysis and reasoning</p>
Assessment	End of topic tests x2	End of topic tests x3 GCSE Mock Paper 1	End of topic tests x2	End of topic tests x2F / x3H GCSE Mock Paper 2 and Paper 3	End of topic test x2	End of topic tests x1 GCSE Mock Full Series P1, P2 & P3

Curriculum overview for Year 11

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p>Curriculum Content:</p> <p>Priority Essential knowledge and skills that will be taught.</p>	<p>FOUNDATION Key Knowledge:</p> <p>Multiples and factors</p> <ul style="list-style-type: none"> Recognise, list and define prime numbers Perform prime factor decompositions Understand and can find the multiples and factors Find the HCF and LCM of a set of numbers Use prime factor decomposition to find the HCF or LCM of two numbers <p>Algebraic manipulation</p> <ul style="list-style-type: none"> Use function machines and find the output, input or function Substitute positive and negative integers into expressions and formulae Simplify expressions by collecting like terms, including powers Simplify expressions involving multiplication and division Expand and simplify multiple single brackets 	<p>FOUNDATION Key Knowledge:</p> <p>Ratio and proportion</p> <ul style="list-style-type: none"> Write a ratio from a real-life situation Write equivalent ratios and find the missing number in two equivalent ratios Reduce a ratio to its simplest form including with different units Divide into a ratio when given the share or total Identify the relationship between ratios and fractions Find the cost of items by using the unitary method Solve best value problems Use proportion to adapt a recipe and use this to solve problems Solve direct and indirect proportion problems <p>Area, perimeter and right-angled triangles</p> <ul style="list-style-type: none"> Solve functional problems by finding the area or perimeter of compound shapes made from rectangles 	<p>FOUNDATION Key Knowledge:</p> <p>Indices and standard form</p> <ul style="list-style-type: none"> Find integer powers and roots Convert between ordinary numbers and standard form Rewrite a number in correct standard form notation Multiply and divide with numbers written in standard form Add and subtract with numbers written in standard form Solve worded problems involving numbers written in standard form <p>Straight line graphs</p> <ul style="list-style-type: none"> Find the midpoint of two points and the endpoint when given the midpoint and one endpoint Use the form $y = mx + c$ to interpret the graph Identify the gradient of a linear graph from the equation and the graph Identify the equation of a linear graph from the graph Identify parallel lines 	<p>FOUNDATION</p> <p>GCSE EXAM PREPARATION</p>	<p>FOUNDATION</p> <p>GCSE EXAM PREPARATION</p> <p>GCSE EXAMS</p>	<p>FOUNDATION</p> <p>GCSE EXAMS</p>

	<ul style="list-style-type: none"> • Take out common factors to factorise • Factorise a quadratic expression, including using the difference of two squares • Use algebra to construct arguments and prove identities • Change the subject of a formula <p>Solving equations</p> <ul style="list-style-type: none"> • Solve missing number problems using inverse operations • Solve one-step linear equations • Solve two-step linear equations with positive integer solutions • Solve two-step linear equations • Solve linear equations with one unknown on one side including brackets and fractions • Construct and solve simple linear equations with integer coefficients and unknown on one side • Write simple equations from a problem or area and perimeter of shapes • Form and solve two linear simultaneous equations in two variables algebraically 	<ul style="list-style-type: none"> • Find the area of parallelograms, triangles, trapeziums and compound shapes • Use Pythagoras's theorem to find a missing length in right-angled triangles • Apply Pythagoras' theorem to solve a problem involving area or perimeter of shapes and to solve a real-life problem • Use the trigonometric ratios to find a missing length in a right-angled triangle • Use the trigonometric ratios to find a missing angle in a right-angled triangle • Know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°, and $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ 	<ul style="list-style-type: none"> • Find the equation of a line when given the gradient (or parallel line) and a point • Find the equation of a line through two given points <p>Compound measures</p> <ul style="list-style-type: none"> • Read speed-time graphs and distance-time graphs • Find the speed from a distance-time graph • Convert compound units (e.g. m/s to km/h) • Calculate speed, distance and time, including where units need converting • Solve speed, distance and time problems regarding a two-part journey • Calculate density, mass and volume • Calculate density, mass and volume where units need converting • Calculate pressure, force and area 			
--	--	---	---	--	--	--

	<p>Skills: Using numeracy skills to solve problems Applying abstract algebra skills to solve mathematical problems</p> <p>HIGHER Key Knowledge:</p> <p>Bounds and compound measures</p> <ul style="list-style-type: none"> • I can use inequality notation to specify simple error intervals due to rounding and truncation • Find upper and lower bounds in simple problems • Convert compound units (e.g. m/s to km/h) • Solve speed, distance and time problems regarding a two part journey • Calculate density, mass and volume where units need converting • Solve density mass and volume problems involving mixing materials • Calculate pressure, force and area <p>Graphs of circles</p>	<p>Skills: Applying ratio and proportion skills to solve real-life problems Using mathematical skills to solve geometric problems</p> <p>HIGHER Key Knowledge:</p> <p>Histograms, cumulative frequency and box plots</p> <ul style="list-style-type: none"> • Interpret and calculate quartiles and interquartile range • Find the interquartile range from a stem and leaf diagram • Construct and interpret box plots • Construct and interpret cumulative frequency diagrams • Construct and interpret a histogram with unequal class widths • Apply statistics to describe a population and to a capture and recapture problem <p>Functions and iteration</p> <ul style="list-style-type: none"> • Show that a complex equation has a solution between two values • Find approximate solutions to equations 	<p>Skills: Manipulating numbers into different forms Solving abstract mathematical problems Applying mathematical skills to real-life problems involving proportion</p> <p>HIGHER Key Knowledge:</p> <p>Transforming graphs</p> <ul style="list-style-type: none"> • Complete the square to find the turning point of quadratic functions • Find the roots, intercepts and turning point of quadratic functions • Use the sketch of a quadratic graph to find the equation using the roots, intercepts and turning point • Describe and sketch transformations of functions <p>Advanced trigonometry</p> <ul style="list-style-type: none"> • Know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°, and $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ • Solve problems using Pythagoras's theorem and trigonometry without a calculator, in 2D and 3D 	<p>HIGHER Key Knowledge:</p> <p>Real life graphs and rates of change</p> <ul style="list-style-type: none"> • Complete and read distance-time and speed-time graphs, and find the speed from a distance-time graph • Find the average speed or acceleration on non-standard real-life distance-time or speed-time graphs • Estimate the speed or acceleration on non-standard real-life distance-time or speed-time graphs by finding the gradient of a tangent • Calculate and estimate the areas under curved graphs and interpret the results • Interpret line graphs for time series data <p>Algebraic proof</p> <ul style="list-style-type: none"> • Use algebra to construct arguments and prove identities 	<p>HIGHER</p> <p>GCSE EXAM PREPARATION</p> <p>GCSE EXAMS</p>	<p>HIGHER</p> <p>GCSE EXAMS</p>
--	---	---	--	--	---	---

	<ul style="list-style-type: none"> Recognise and interpret the equation of a circle with centre at the origin Calculate whether a given point lies inside, on or outside a circle Solve problems using the equation of a circle Find the equation of a tangent to a circle at a given point Solve problems including find the equation of a tangent to a circle at a given point <p>Linear and quadratic simultaneous equations</p> <ul style="list-style-type: none"> Form and solve two linear simultaneous equations in two variables algebraically and graphically Solve two simultaneous equations (one linear, one quadratic) Solve two simultaneous equations (one linear, one quadratic) approximately graphically 	<p>using iteration, including using suffix notation in recursive formulae</p> <ul style="list-style-type: none"> Obtain the output or input of a function using function notation Write the reverse process of a function as the "inverse function" Use the succession of two functions as a "composite function", including writing this as a single function Solve problems involving functions, including using simultaneous equations to find the function machine 	<ul style="list-style-type: none"> Apply the sine and cosine rules to solve problems Solve bearing problems including advanced trigonometry Apply the formula $A = \frac{1}{2}ab\sin C$ to calculate the area of a triangle I can apply the formula $A = \frac{1}{2}ab\sin C$ to calculate the sides, angles or area of a triangle Use the graphs of trigonometric functions to find the solutions to a trigonometric equation between a given range <p>Vectors</p> <ul style="list-style-type: none"> Describe directional vectors as column vectors and vice versa Add and subtract vectors, and multiply vectors by a scalar (use diagrammatic and column representations) Use vectors solve geometrical problems, including midpoints and lines divided into a ratio Use vectors to construct geometrical proofs (lines are parallel, points lie on a straight line) 	<ul style="list-style-type: none"> Disprove by counterexample Express a number property using algebra Construct algebraic proofs 		
--	---	--	--	---	--	--

	<p>Skills: Apply algebraic and geometric skills to solve abstract mathematical problems and then apply these skills to real-world problems</p>	<p>Skills: Construct and interpret statistical diagrams to represent a sample or population Solve abstract logical problems involving functions</p>	<p>Skills: Apply algebraic and geometric skills to solve abstract mathematical problems</p>	<p>Skills: Applying algebraic skills to real life problems Understand the importance of mathematical proof and apply algebraic skills to construct proofs</p>		
Assessment	<p>End of topic tests x3</p> <p>GCSE Mock Paper 1</p>	<p>End of topic tests x2</p> <p>GCSE Mock Papers 2 and 3</p>	End of topic tests x3	<p>End of topic tests x1H</p> <p>GCSE Mock Papers 1, 2 and 3</p>		