Curriculum Overview: Mathematics Year 7 Mainstream

Year 7 Theta Autumn Term 1			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
Analysing and Displaying Data	**Knowledge** • Know how to find the averages of given data • Find range of given data • Compare 2 sets of given data • Recognise and interpret data being presented **Skills** • Construct tally charts and frequency tables • Read pictograms, bar charts and bar –line charts • Analyse and interpret data to find averages and range • Read and draw line graphs, bar charts • Read a spreadsheet and draw relevant charts from this data	Having a full understanding of data and how it is represented. Being able to calculate averages and range using the given data. The ability to apply to problem solving questions and word problems Creating your own questions based on data represented. Evaluating data and representing it in different ways/graphs/charts	Corbett Maths Doddle Resources CGP Mathematics for KS2 Book 1/2 Maths Box

Number Skills	**Knowledge** • Place value of digits in a number • How to round numbers to the nearest 10,100 and 1000 • Times tables up to 12x12 • How to use positive and negative numbers. • Understand strategies for multiplying and dividing whole numbers. **Skills** • Use priority of operations • Multiply and divide whole and decimal numbers • Estimate answers • Write a number as a product of its primes • Use prime factor decomposition and venn diagrams to find HCF and LCM	Having a full understanding of place value and being able to identify the value of a digit in a whole number. Being able to calculate with integers mentally. Recalling all times tables facts up to 12x12 The ability to apply all number facts and operations and apply it to problem solving questions and word problems in the correct order of operations. Creating your own number questions. Evaluating questions and applying the correct number property to solve it and the correct order of operations.	

Curriculum Overview: Mathematics Year 7 Mainstream

Year 7 Theta Autumn Term 2			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
Expressions, functions and formulae	**Knowledge** • Recognise simple functions	Having a full understanding of simple functions	Corbett Maths Doddle Resources CGP Mathematics for KS2 Book 1/2

	• Identify the symbols in a given function • Find outputs of simple functions written in words and using symbols. • Use algebra in operations • Identify formulae and functions. • Identify the unknowns in a formula and a function. • Simplify expressions **Skills** • Describe simple functions in words. • Simplify simple algebraic expressions by collecting like terms. • Use brackets with numbers and letters. • Simplify more complicated expressions by collecting like terms. • Write expressions from word descriptions using addition, subtraction and multiplication. • Write expressions to represent function machines. • Substitute positive integers into simple formulae written in words. • Substitute integers into formulae written in letter symbols.	Use functions to calculate simple outputs Explain in words how a function works Use the correct symbols to perform the functions The ability to apply to problem solving questions and word problems Solve simple algebraic expressions Create algebraic expression from worded questions	Maths Box

	• Identify variables and use letter symbols. • Write simple formulae using letter symbols.		
Decimals and Measures	**Knowledge** • Round decimals • Use a ruler accurately • Know place value of numbers including decimals • Round decimals • Know the conversions between metric units of length, mass and capacity • Be able to compare measures • Read co-ordinates **Skills** • Convert measures into same units • Round decimals to 1dp • Solve simple problems involving units of measure • Use a calculator accurately • Plot and read co-ordinates across 4 quadrants • Multiply decimals mentally • Solve decimal calculations (add and subtract) • Calculate perimeter of a given shape • Calculate area of squares and rectangles	Have a full understanding of decimals and place value Be able to round to 1 dp or 1 significant figure Use measuring equipment such as rulers and read the given scales Know the conversion rules for different units of measure including length/mass/capacity Read co-ordinates accurately and plot on a graph with 4 quadrants Know times tables up to and including 12 times Solve worded problems and choose appropriate methods for solving Find the perimeter of given shapes and calculate missing lengths Find area of given squares and rectangles including finding missing lengths	Corbett Maths Doddle Resources CGP Mathematics for KS2 Book 1/2 Maths Box

		Be able to solve worded problems involving area and perimeter – making some of their own.	

Curriculum Overview: Mathematics Year 8 Mainstream

Year 8 Autumn Term 1			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
Number properties and calculations	**Knowledge** • Calculate exactly with fractions and multiples of pi • Fully understand how to estimate by rounding • Order + _ integers , decimals and fractions • Work with ratio and fraction problems **Skills** • Recalling all times tables facts up to 12x12 • Use relationships between operatations , including inverse and bodmas • Problem solving • Identifying question meaning.	Having a full understanding of place value and being able to identify the value of a digit in a whole number. Being able to calculate with integers mentally. The ability to apply all number facts and operations and apply it to problem solving questions and word problems in the correct order of operations. Creating your own number questions. Evaluating questions and applying the correct number property to solve it and the correct order of operations.	Corbett Maths PixL Maths App GCSEPod Maths Doddle Resources Pixi Revision Booklet 1

Curriculum Overview: Mathematics Year 8 Mainstream

Year 8 Autumn Term 2			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
To use algebra to solve problems.	**Knowledge** • Using the four operations on integers • Recall the use of hierarchy of operations • Evaluate numerical expressions involving powers and roots • Multiply and divide numbers with indices • Finding the HCF & LCM of two numbers • Simplify simple algebraic expressions **Skills** • Use of correct algebraic notation • Applying index laws • Substitute numbers into expressions • Expand brackets • Factorise simple algebraic expressions • Write expressions and simple formulae to solve problems	Understanding the use of algebraic notation. Confidently summarising the index laws and memorising it. Being able to express the index laws in algebraic notation and showing a deep understanding of this. Being able to take any worded problem and represent it as an equation or expression. Applying all knowledge of algebra to solve problems. Creating algebraic problems that can stretch and challenge yourself and your peers.	Corbett Maths PixL Maths App GCSEPod Maths Doddle Resources Pixi Revision Booklet 1

Curriculum Overview: Mathematics Year 9 GCSE

Year 9 Autumn Term 1			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
Number properties and calculations	**Knowledge** • Place value of digits in a number • How to round numbers to the nearest 10,100 and 1000 • Times tables up to 12x12 • How to use positive and negative numbers. • Understand strategies for multiplying and dividing whole numbers. **Skills** • Use priority of operations • Multiply and divide whole and decimal numbers • Estimate answers • Write a number as a product of its primes • Use prime factor decomposition and venn diagrams to find HCF and LCM	Having a full understanding of place value and being able to identify the value of a digit in a whole number. Being able to calculate with integers mentally. Recalling all times tables facts up to 12x12 The ability to apply all number facts and operations and apply it to problem solving questions and word problems in the correct order of operations. Creating your own number questions. Evaluating questions and applying the correct number property to solve it and the correct order of operations.	Corbett Maths PixL Maths App GCSEPod Maths Doddle Resources Pixi Revision Booklet 1

Curriculum Overview: Mathematics Year 9 GCSE

Year 9 Autumn Term 2			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
To use algebra to solve problems.	**Knowledge** • Using the four operations on integers • Recall the use of hierarchy of operations • Evaluate numerical expressions involving powers and roots • Multiply and divide numbers with indices • Finding the HCF of two numbers • Simplify simple algebraic expressions **Skills** • Use of correct algebraic notation • Applying index laws • Substitute numbers into expressions • Expand brackets • Factorise algebraic expressions • Write expressions and simple formulae to solve problems	Understanding fully the use of algebraic notation. Confidently summarising the index laws and memorising it. Being able to express the index laws in algebraic notation and showing a deep understanding of this. Being able to take any worded problem and represent it as an equation or expression. Applying all knowledge of algebra to solve problems. Creating algebraic problems that can stretch and challenge yourself and your peers.	Corbett Maths PixL Maths App GCSEPod Maths Doddle Resources Pixi Revision Booklet 1

Curriculum Overview: Mathematics Year 10 Foundation

Autumn			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
GRAPHS **TRANSFORMATIONS** **RATIO AND PROPORTIONS**	**Knowledge** **-** know how to recognise, name and plot straight-line graphs parallel to the axes. - know how to identify and interpret the gradient from an equation. - know how to use a column vector to describe a translation. **Understanding** - Sketching graphs given the values of m and c. - Transforming shapes using more than one transformation - using the equation of a straight line **Skills** -be able to complete a table of values for a function -be able to transform shapes using more than one transformation	Students begin to show confidence in their work and attend the exam style questions.	www.mathsgenie.co.uk www.mathswatch.com www.drfrostmaths.com

Curriculum Overview: Mathematics Year 10 HIGHER

Autumn			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
EQUATIONS AND INEQUATIONS **PROBABILITY** **MULTIPLICATIVE REASONING**	**Knowledge** - know how to solve more complex quadratic equations. - know all the possible outcomes of two events in a sample space diagram. - Know how to find an amount after repeated percentage changes. **Understanding** - Use real-life situations to construct quadratic and linear equations and solve them. - understand how to use two-way tables to calculate conditional probability. - understand how to convert between metric speed measures. **Skills** -be able to complete the square for a quadratic expression. -be able to use Venn diagrams to calculate conditional probability -be able to use direct and indirect proportion.	Students begin to show confidence in their work and attend the exam style questions.	www.mathsgenie.co.uk www.mathswatch.com www.drfrostmaths.com https://corbettmaths.com/

Curriculum Overview: Mathematics Year 11 FOUNDATION

Autumn			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
FRACTIONS, INDICES AND STANDARD FORM **CONGRUENCE, SIMILARITY AND VECTORS** **MORE ALGEBRA**	**Knowledge** - know how to Multiply and divide mixed numbers and fractions. - know how to find the scale factor of an enlargement. - Know how to draw and interpret graphs of cubic functions. **Understanding** - understand how to convert numbers from standard form with negative powers of ordinary numbers - Understand the similarity of regular polygons. - understand how to write and solve simultaneous equations. **Skills** -be able to add and subtract numbers in standard form. -be able to use congruence to work out unknown sides. -be able to prove results using algebra.	Students begin to show confidence in their work and attend the exam style questions. Applying knowledge to exam style questions Ability to interpret results in the context of the given problem	www.mathsgenie.co.uk www.mathswatch.com www.drfrostmaths.com https://corbettmaths.com/

Curriculum Overview: Mathematics Year 11 HIGHER

Autumn			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
VECTORS AND GEOMETRIC PROOF **PROPORTION AND GRAPHS**	**Knowledge** - know how to calculate using vectors and represent the solutions graphically. - know how to use the resultant of two vectors to solve vector problems. - Know how to use equations to solve problems involving direct proportion. **Understanding** - Understand and use vector notation. powers of ordinary numbers - Understand how to apply vector methods for simple geometric proofs. - Understand the relationship between translating a graph and the change in its function notation. **Skills** -be able to solve geometric problems in two dimensions using vector methods. -be able to recognise graphs of exponential functions.	Students begin to show confidence in their work and attend the exam style questions. Applying knowledge to exam style questions Ability to interpret results in the context of the given problem	www.mathsgenie.co.uk www.mathswatch.com www.drfrostmaths.com https://corbettmaths.com/

Curriculum Overview: Mathematics Year 12 AS Further Maths

Autumn Term 1			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
COMPLEX NUMBERS **SERIES** **ALGEBRA AND FUNCTIONS** **CALCULUS**	**Knowledge** **-** know how to use and interpret Argand diagrams -know how to use use sigma notation; Know how to derive formulae for and calculate volumes of revolution about both the x and y-axes. **Understanding** - Using the difference of two squares and surds (rationalisation) to illustrate the method of manipulation of complex conjugates - using formulae for the sums of integers **Skills** -be able to sketch curves defined by simple equations including polynomials -be able to find lengths and areas using equations of straight lines	Students begin to show confidence in solving different types of equations including those with non-integer coefficients of either or both variables. Linking problems with other areas of mathematics from A-level content Construct extended arguments to solve problems presented in an unstructured form, including problems in context Understand, interpret and extract information from diagrams and construct mathematical diagrams to solve problems	www.mathsgenie.co.uk www.physicsandmathstutor.com www.drfrostmaths.com
Autumn Term 2			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
MATRICES	**Knowledge**		

PROOF **VECTORS**	-know to use inverse matrices to reverse the effect of a linear transformation - know how to use mathematical induction to prove general statements involving matrix multiplication - know how to find the vector equation of a line in both two and three dimensions; **Understanding** - find invariant points and lines for a linear transformation - using the structure of mathematical proof - using the vector and Cartesian forms of the equation of a plane. **Skills** - be able to calculate the inverse of non-singular 2×2 and 3×3 matrices - be able to find an unknown coefficient of a binomial expansion. -be able to use proof by induction to prove that an expression is divisible by a certain integer	Comprehend and critique mathematical arguments, proofs and justifications of methods and formulae, including those relating to applications of mathematics Applying knowledge to exam style questions Understand the concept of a mathematical problem solving cycle, including specifying the problem, collecting information, processing and representing information and interpreting results, which may identify the need to repeat the cycle	www.mathsgenie.co.uk www.physicsandmathstutor.com www.drfrostmaths.com

Curriculum Overview: Mathematics Year 13 A-Level course

Autumn Term 1			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
Algebraic methods **Functions and graphs** **Sequences and series** **Binomial expansion**	**Knowledge** -understand the use and application of various types of proof. - be able to use and manipulate algebraic and partial fractions. - be able to sketch graphs of functions involving modulus functions; --be able to solve problems involving arithmetic and geometric series and sequences **Understanding** - Defining the term modulus function and using the general notation $y = \|f(x)\|$. **Skills** -Model real life situations using sequences and series - should be able to sketch the graphs of $y = \|ax + b\|$	Students begin to show confidence in solving different types of equations including those with non-integer coefficients of either or both variables. Students begin to demonstrate how to transform points and asymptotes both when sketching a curve and to give either the new point or the equation of the line.	www.mathsgenie.co.uk www.physicsandmathstutor.com www.drfrostmaths.com
Autumn Term 2			
What are we learning?	What knowledge, understanding and skills will we gain?	What does excellence look like?	What additional resources are available?
	Knowledge		

Radians **Trigonometric functions** **Trigonometry and modelling** **Parametric equations**	- know and be able to use to solve circle and trigonometry problems. - be able to use reciprocal trigonometric functions in calculations and - be able to use the double angle formulae - be able to use parametric equations in a variety of contexts. **Understanding** - Apply and prove trigonometric identities including reciprocal and inverse functions. **Skills** -be able draw and sketch the graphs of reciprocal and inverse trigonometric functions, and parametric curves -	Students begin to show confidence in solving different types of equations including those with non-integer coefficients of either or both variables. Applying knowledge to exam style questions Ability to interpret results in the context of the given problem	www.mathsgenie.co.uk www.physicsandmathstutor.com www.drfrostmaths.com