Maths Curriculum Map

	Autumn	Spring	Summer
Year 7	Analysing Data: • Calculating Averages • Construct and Interpret Charts Number Skills: • Order of operations • Rounding and estimating • Negative numbers • Prime numbers, factors and multiples Expressions, functions and formulae: • Substitution into formulae • Collecting like terms, expanding brackets • Forming expressions Decimals and measures: • Order decimals and fractions • Use inequalities • Coordinates in 4 quadrants	Fractions: • Convert between fractions, decimals and percentages • Simplify fractions and find equivalent fractions Probability: • Use appropriate language of probability • describe and analyse the frequency of outcomes of simple probability experiments Ratio and proportion: • Solve problems involving direct proportion • Simplify and share in a ratio	Lines and angles: • Draw and measure line segments and angles • Know and use the properties of angles at a point, on a straight line, vertically opposite angles and angles in a triangle • Use the sum of angles in a triangle to deduce the angle sum in any polygon Sequences and graphs: • Generate terms of a sequence • Find the *n*th term • Plot linear graphs Transformations: • Derive properties of regular polygons • Identify/describe properties : translations, rotations, reflections and enlargements

Year 8	Number: • Factors and multiples including HCF and LCM • Prime factorisation • Powers and • Recognise powers of 2, 3, 4, 5 Area and volume: • Solve problems involving area of triangles, parallelograms, trapezia • Solve problems involving volume of cuboids • Composite shapes • Change between standard units Statistics, graphs and charts: • Continuous, discrete and grouped data • Use appropriate average and measures of spread • Bar charts, pie charts and scatter graphs Expressions and equations: • Use and interpret algebraic notation • Collect like terms • Factorise expressions • Solve linear equations	Real-life graphs: • Model situations or procedures by using graphs Decimals and ratio: • Round numbers to decimal places and significant figures • Simplify and share in a ratio Lines and angles: • Angles in parallel lines • Deduce the angle sum in any polygon • Congruence, similarity and properties of quadrilaterals Calculating with fractions: • Arithmetic with fractions • Convert between decimals and fractions.	Straight-line graphs: • Plot linear graphs • Calculate and interpret gradients and intercepts of linear graphs • Direct proportion Percentages, decimals and fractions: • Express one quantity as a percentage of another • Compare two quantities using percentages • Work with percentages greater than 100%

Year 9 Foundation	BEGIN GCSE 9-1 modules **FOUNDATION** Number: • *Apply the 4 operations to decimals* • Factors, multiples and prime numbers including LCM and HCF • Calculate with roots and integer indices • Use prime factorisation • Use standard units of measure • Rounding and estimating Algebra: • Use and interpret algebraic notation, • Substitution into formulae • Simplify and manipulate algebraic expressions by collecting like terms, expanding brackets and factorising • Index laws Graphs, tables and charts: • Standard ruler and compass constructions • Standard units of measure • Measure line segments and angles • Interpret and construct tables, charts and diagrams • Interpret, analyse and compare appropriate measures of central tendency and spread • Scatter graphs	**FOUNDATION** Fractions and percentages: • Apply the four operations to integers, decimals and simple fractions • Simplify fractions and find equivalent fractions. • Prime factorisation, HCF and LCM • Convert between decimals and fractions • Round numbers to decimal places and significant figures • Compare two quantities using percentages; calculate percentage change, original value problems and simple interest Equations, Inequalities and sequences: • *Solving linear equations algebraically and graphically* • Substitution into formulae • Rearrange formulae • nth term	**FOUNDATION** Angles: • Use correct notation and vocabulary to describe shapes • Know and use angle properties of triangles • Angles in parallel lines • Congruence and similarity • Simple proofs • Interior and exterior angles of polygons Averages and Range: • Interpret and construct tables, charts and diagrams • Use appropriate measures of central tendency and spread • Sampling a population • Estimating the mean

Year 9 Higher	**HIGHER** Number: • Written calculations • Indices and roots • Types of number eg HCF and LCM • Estimation and rounding • Simplify Surds Algebra: • use the symbols =, ≠, <, >, ≤, ≥ • Calculations with fractions … • Standard form • Substitution • Simplify and manipulate algebraic expressions • Nth term of linear sequences Interpreting and representing data: • *Use standard units of measure* • Interpret and construct tables, charts and diagrams • Use appropriate measures of central tendency and spread • Scatter graphs	**HIGHER** Fractions, ratio and percentages: • Calculations with fractions … • Recurring fractions • Ratio problems • Percentage problems Angles and trigonometry: • Angles in parallel lines • Properties of quadrilaterals • Apply angle facts • Pythagoras' theorem • Trigonometry	**HIGHER** Graphs: • Straight line graphs • Interpret real life graphs • Solve simple kinematic problems involving distance, speed and acceleration • Direct and indirect proportion Area and Volume: • Perimeter and area • Units and accuracy • Prisms • Circles and spheres • Pyramids and cones

Year 10 Foundation	**FOUNDATION** Perimeter, area and volume 1: • *Use standard units measure* • Estimation • Know and apply formulae to calculate area and perimeter of shapes including composite shapes • Calculate the surface area and volume of a 3D shape Graphs: • Plot linear graphs • Calculate the gradient and intercept of linear graphs • Plot and interpret real life graphs Transformations: • Translation, reflection, rotation and enlargement • Describe translations as 2D vectors • Combine transformations	**FOUNDATION** Ratio and proportion: • Share in a given ratio • Write and simplify a ratio • Solve problems involving direct and indirect proportion • Compound units • Compare lengths, areas and volumes using ratio notation Right Angled Triangles: • Know and use Pythagoras' Theorem • Know and use Trigonometry	**FOUNDATION** Probability: • Calculate probabilities • List outcomes • Venn diagrams • Relative frequency • Tree diagrams Multiplicative reasoning: • Solve problems involving percentage change • Compound interest • Solve problems involving direct and indirect proportion

Year 10 Higher	**HIGHER** Transformations and constructions: • 3D solids • Transformations • Bearings and scale drawings • Constructions and loci Equations and inequalities: • *Solve quadratic equations* • Simultaneous equations • Completing the square Probability: • Calculating probabilities • Probability tree diagrams • Relative frequency. Mutually exclusive events	**HIGHER** Multiplicative reasoning: • Compound measures • Ratio and proportion Similarity and congruence: • Congruence and similarity • Proofs	**HIGHER** More trigonometry: • Graphs of trigonometric functions • Accuracy including bounds • Sine and cosine rule Transformation of trigonometric graphs Further statistics: • Sampling • Cumulative frequency and box plots • Histograms

Year 11 Foundation	**FOUNDATION** Loci and construction: • Use scale factors, scale diagrams and maps • Describe 3D shapes • Standard ruler and compass constructions • Draw accurate scale drawings • Bearings • Loci Quadratic equations and graphs: • Expand double brackets • Factorise quadratic expressions, including the difference of two squares • Plot and interpret quadratic graphs • Solve quadratic equations algebraically Perimeter, area and volume 2: • Calculate exactly with multiples of π • Know and apply formulae to calculate the area of triangles, parallelograms, trapezia; volume of cuboids and other right prisms • Know and apply the formulae for the circumference and area of a circle • Calculate the area and perimeter of semi circles and sectors	**FOUNDATION** Fractions, indices and standard form: • Multiply and divide fractions • Index laws • Write and interpret numbers in standard form • Calculate with standard form • Calculate with and interpret standard form $A \times 10^n$, where $1 \leq A < 10$ and n is an integer. Congruence, similarity and vectors: • Use the basic congruence criteria for triangles • Identify, describe and construct congruent and similar shapes. • Addition and subtraction of vectors and multiplication of vectors by a scalar	**FOUNDATION** Algebra: • Recognise, sketch and interpret graphs of cubic and reciprocal functions • Solve linear equations algebraically and graphically • Solve simultaneous equations algebraically and graphically • Rearrange formulae • Solve problems involving direct and inverse proportion

Year 11 Higher	**HIGHER** Equations and graphs: • Simultaneous equations graphically • Graphs of quadratic equations Circle theorems: • Equation of a circle with centre at the origin; • find the equation of a tangent to a circle at a given point • Apply and prove the standard circle theorems More algebra: • Simplify surd expressions involving squares and rationalise denominators • Simplify and manipulate expressions involving algebraic fractions • Difference of 2 squares • Rearrange formulae • Solve quadratic equations algebraically by factorising.	**HIGHER** Vectors and geometric proof: • Addition and subtraction of vectors • multiplication of vectors by a scalar • use vectors to construct geometric arguments and proof Proportion and graphs: • Sketch translations and reflections of a given function • Plot and interpret reciprocal graphs and exponential graphs • Calculate or estimate gradients of graphs and areas under graphs • Solve problems involving direct and inverse proportion	**HIGHER** Preparation for GCSE EXAMS

Year 12	**A-Level until Sept 2017** In year 12 students study 3 modules, these consist of the core modules C1 and C2 and an option module. C1: Algebra and functions; co-ordinate geometry in the (x,y) plane; sequences and series; differentiation; integration C2: Algebra and functions; co-ordinate geometry in the (x,y) plane; sequences and series; trigonometry, exponentials and logarithms; differentiation; integration.	Option Module Mechanics M1: Mathematical models in mechanics; vectors in mechanics; kinematics of a particle moving a in a straight line; dynamics of a particle moving in a straight line or plane; statics of a particle; moments Decision D1: Algorithms; algorithms on graphs; the route inspection problem; critical path analysis; linear programming; matchings. Statistics S1: Mathematical models in probability and statistics; representation and summary of data; probability; correlation and regression; discrete random variables; discrete distributions; the Normal distribution.	Preparation for module exams
Year 13	In year 13 students study 3 modules, these consist of the core modules C3 and C4 and an option module. C3: Algebra and functions; trigonometry; exponentials and logarithms; differentiation; numerical methods. C4: Algebra and functions; coordinate geometry in the (x,y) plane; sequences and series; differentiation; integration; vectors.	Students can choose from the option modules they did not complete in year 12 or students could continue to M2, D2, S2 but would need to be discussed with their teacher.	Preparation for Module exams

Useful Links

National Curriculum link: https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study

www.mymaths.co.uk

www.pearsonactivelearn.co.uk

www.mrbartonmaths.co.uk

www.mathsgenie.co.uk

www.bbcbitesize.co.uk

KS4 Specification Information

Edexcel GCSE Mathematics (9-1)

There are 2 tiers of entry – higher (grades 4 to 9) and foundation (grades 1 – 5)
For each tier there are 3 written exam papers - 1 non calculator paper and 2 calculator papers. Each paper is 1 hour and 30mins.

KS5 Specification Information

Edexcel GCE Mathematics (A-level)
For each module there is a 1 hour 30 minute exam.

For information, please look at the exam board website **www.edexcel.org.uk**

Please note, there is a new A-level programme of study to start in Sept 2017. The information for this will be updated shortly.

Where will this Subject take me?

Higher Education Pathways:

Degrees in: Mathematics, Medicine, Dentistry, Engineering, Computing Programming, Accountancy, Business, Operational Research, Actuarial Science, Law and Architecture.

Careers:

Careers can include Accountancy, Finance and banking, Computer game designer, Architect, Manager, Lawyer, Doctor, Pilot, Engineer, Management Consultant and many more!