Key Stage 4 Curriculum Journey: Mathematics

The maths curriculum is designed to inspire students and to deepen their understanding of key mathematical knowledge and concepts to enable them to use and apply their knowledge both in and outside a classroom. Our aim is to raise students understanding of the importance of mathematics and how it is used every day of our lives, in turn raising their aspirations and options for future career paths.

YEAR 10 CURRICULUM JOURNEY

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Topic	Number, powers, decimals, HCF and LCM, roots and rounding Expressions, substituting into simple formulae, expanding and factorising	Drawing and interpreting graphs, tables and charts	Fractions and percentages Equations, inequalities and sequences	Angles, polygons and parallel lines Statistics, sampling and the averages	Perimeter, area and volume Real life, algebraic and linear graphs	Transformations
Key Knowledge, Skills & Understanding	Use priority of operations with positive and negative numbers. Round to a given number of decimal places and significant figures. Multiply and divide decimal numbers. Estimate answers to calculations. Find common factors and common multiples of two numbers. Find the HCF and LCM of two numbers by listing and using Venn Diagram Find square roots and cube roots. Use the laws of indices Write and simplify algebraic expressions Expand a single bracket Multiply and divide expressions Substitute numerical values into formula	Design and use two-way tables Draw and interpret comparative and composite bar charts Use trends to predict what might happen in the future Construct and interpret stem and leaf and back-to-back stem and leaf diagrams Draw and interpret pie charts and scatter graphs	Compare fractions Add and subtract fractions Multiply and divide whole numbers, fractions and mixed numbers Simplify calculations by cancelling Convert fractions to decimals and vice versa Convert percentages to fractions and vice versa Calculate simple interest. Calculate percentage increases and decreases including VAT Understand and use inverse equations Rearrange simple linear equations Solve simple linear equations, two step equations and equations with brackets and with unknowns on both sides Solve simple linear inequalities Represent inequalities on a number line Substitute values into formulae and solve equations Change the subject of a formula Know the difference between an expression, an equation, a formula and an identity Recognise and extend sequences Use the nth term to generate terms of a sequence and find the nth term of an arithmetic sequence	Solve geometric problems using side and angle properties of quadrilaterals Identify congruent shapes Understand and use the angle properties of parallel lines Find missing angles using corresponding and alternate angles Understand angle proofs about triangles Calculate the interior and exterior angles of regular and irregular polygons Calculate the mean from a list and from a frequency table Compare sets of data using the mean and range Find the mode, median and range from a stem and leaf diagram Identify outliers Estimate the range from a grouped frequency table Recognise the advantages and disadvantages of each type of average Find the modal class Find the median from a frequency table Estimate the mean of grouped data Understand the need for sampling Understand how to avoid bias	Calculate the perimeter and area of rectangles, parallelograms and triangles Calculate a missing length, given the area Calculate the area and perimeter of trapezia Convert between units of measures Calculate the perimeter and area of shapes made from triangles and rectangles Calculate the surface area of 3D shapes Calculate the volume of 3D shapes Solve problems involving surface area and volume Recognise, name and plot straight-line graphs parallel to the axes Plot straight-line graphs from tables of values Find the gradient of a line Understand that parallel lines have the same gradient Understand what m and c represent in y = mx + c Find the equations of straight-line graphs Draw and interpret graphs from real data Use distance–time graphs to solve problems	Translate a shape on a coordinate grid Use a column vector to describe a translation Draw a reflection of a shape in a mirror line Draw reflections on a coordinate grid Describe reflections on a coordinate grid Rotate a shape on a coordinate grid Describe a rotation Enlarge a shape by a scale factor Enlarge a shape using a centre of enlargement Identify the scale factor of an enlargement Find the centre of enlargement Transform shapes using more than one transformation Describe combined transformations of shapes on a grid
GCSE Assessment Objectives	Edexcel Two Year Foundation Scheme of Work					
MAPs	Unit 1 Number, powers, decimals, HCF and LCM, roots and rounding Unit 2 Expressions, substituting into simple formulae, expanding and factorising	Unit 3 Drawing and interpreting graphs, tables and charts	Unit 4 Fractions and percentages Unit 5 Equations, inequalities and sequences	Unit 6 Angles, polygons and parallel lines Unit 7 Statistics, sampling and the averages	Unit 8 Perimeter, area and volume Unit 9 Real life, algebraic and linear graphs	Unit 10 Transformations

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	YEAR 11 CURRICULUM JOURNEY					
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Topic	Ratio and Proportion 3 : 2	Probability	Algebra: quadratic equations and graphs	More fractions, reciprocals, standard form, zero and negative indices (not including 10) $1.9 \times 10^7 = 19000000$	Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equations Types of Graphs Linear (straight line) $y = mx + c$; Quadratic $y = ...x^2 + ...$; Cubic $y = ...x^3 + ...$; $y = -mx + c$ $y = ...x^2 + ...$; Reciprocal $y = \frac{1}{x}$	
	Right – angled triangles: Pythagoras and trigonometry $a^2 + b^2 = c^2$	Constructions: triangles, nets, plan and elevation, loci, scale drawings and bearing	Perimeter, area and volume 2: circles, cylinders, cones and spheres $= \frac{4}{3}\pi r^3$	Congruence, similarity and vectors SIMILAR VS CONGRUENT		
Key Knowledge, Skills & Understanding	Write a ratio in its simplest form Solve problems using ratios Divide a quantity into 2 or more parts in a given ratio Solve ratio and proportion problems Use the unitary method to solve proportion problems Work out which product is better value for money Recognise different types of proportion Calculate the length of the hypotenuse and the shorter side in a right-angled triangle Understand and recall the sine, cosine and tangent ratio in right-angled triangles, and use these ratios to calculate lengths of sides and angles in right angle triangles Solve problems using an angle of elevation or depression Know the exact values of the sine, cosine and tangent of some angle	Calculate simple probabilities from equally likely events Find and interpret probabilities based on experimental data Use Venn diagrams to work out probabilities Work out probabilities using tree diagrams for both dependent and independent events Recognise 3D shapes and their properties Understand and draw plans and elevations of 3D shapes Make accurate drawings of triangles using a ruler, protractor and compasses Accurately draw angles and 2D shapes using a ruler, protractor and compasses Bisect angles and lines using rulers and compasses Draw loci for the path of points that follow a given rule Find and use three-figure bearings Use angles at parallel lines to work out bearings	Multiply double brackets Plot graphs of quadratic functions and use to solve problems such as ax2 + bx + c = 0 and ax2 + bx + c = k Factorise and solve quadratic expressions Calculate the circumference of a circle Work out the area of a circle Understand and use maths language for circles and perimeters Work out areas of semicircles and quarter circle and perimeters Solve problems involving sectors of circles Work out the volume and surface area of cylinders, spheres, pyramids, comes and composite solids	To know and use the laws of indices Convert large and small numbers into standard form and vice versa Add, subtract, multiply and divide numbers in standard form Interpret a calculator display using standard form and know how to enter numbers in standard form Use the basic congruence criteria for triangles Solve angle problems involving congruence Identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides Solve problems to find missing lengths in similar shapes Use column notation in relation to vectors Identify two column vectors which are parallel Calculate using column vectors, and represent graphically, the sum of two vectors, the difference of two vectors and a scalar multiple of a vector	Draw and interpret graphs of cubic functions Draw and interpret graphs of y = 1/x Draw and interpret non-linear graphs to solve problems Solve simultaneous equations by drawing a graph Write and solve simultaneous equations Solve simultaneous equations algebraically Change the subject of a formula	
GCSE Assessment Objectives	Edexcel Two Year Foundation Scheme of Work					
MAPs	Unit 11 Ratio and Proportion Unit 12 Right – angled triangles: Pythagoras and trigonometry	Unit 13 Probability Unit 15 Constructions: triangles, nets, plan and elevation, loci, scale drawings and bearing	Unit 16 Algebra: quadratic equations and graphs Unit 17 Perimeter, area and volume 2: circles, cylinders, cones and spheres	Unit 18 More fractions, reciprocals, standard form, zero and negative indices Unit 19 Congruence, similarity and vectors	Unit 20 Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equations	