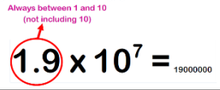
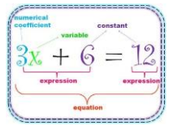
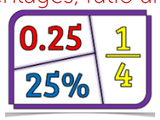
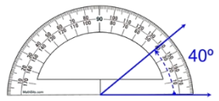
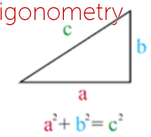
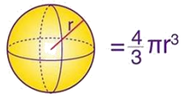
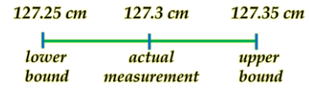
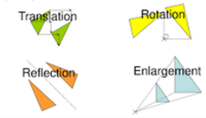
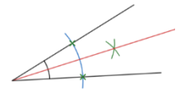
Key Stage 4 Curriculum Journey: Mathematics

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	Factors, multiples, standard form, indices and surds  Algebra 	Collecting, analysing and representing data  Fractions, percentages, ratio and proportion 	Angles  Pythagoras and trigonometry 	Graphs 	Perimeter, area and volume  Accuracy and bounds 	Transformations  Constructions 
Key Knowledge, Skills & Understanding	Estimate answers to calculations Recall factors and multiples Use index laws to simplify expressions Find the highest common factor (HCF) and lowest common multiple (LCM) of two numbers Convert numbers in and out of standard form Calculate with numbers in standard form Simplify expressions Expand and simplify expressions Factorise expressions Rearrange the subject of a formula Substitute values into expressions Set up and solve linear equations Find the nth term of linear and quadratic sequences	Design and use two-way tables Construct and interpret stem and leaf diagrams Calculate the mean, mode, median and range of data sets Produce and interpret bar charts, frequency polygons, line graphs and scatter graphs Compare fractions Convert between mixed numbers and improper fractions Convert a fraction into a recurring decimal and vice versa Convert between fractions, decimals and percentages Calculate percentages of amounts, percentage increases and decreases and percentage change Use equivalent ratios and simplify ratios Divide an amount into a given ratio	Classify triangles Understand what is meant by 'regular' and 'irregular' polygons Calculate missing angles in and around polygons Calculate missing angles in and around parallel lines Understand, recall and use Pythagoras' Theorem Understand, recall and use the trigonometric ratios sine, cosine and tangent Know the exact values of sin θ and cos θ for θ = 0°, 30°, 45°, 60° and 90°; know the exact value of tan θ for θ = 0°, 30°, 45° and 60°.	Identify and plot points in all four quadrants Draw and interpret straight line graphs for real life situations Find the midpoint of a line segment Identify and interpret the gradient of a line segment Find the equation of a line in the form y=mx+c Plot and draw graphs of straight lines Explore the gradients of parallel and perpendicular lines Recognise a linear, quadratic, cubic, reciprocal and circle graph	Calculate the perimeter of 2d shapes Recall and use formulae for the area of a triangle, rectangle, trapezium and parallelogram, using a variety of metric measures Name and draw parts of a circle Recall and use the formulae for the area and circumference of a circle Calculate the volume and surface area of cubes, cuboids, cones, pyramids, cylinders and spheres Calculate the upper and lower bounds of numbers given to a varying degree of accuracy Use the upper and lower bounds to find a solution to an appropriate degree of accuracy Use inequality notation to specify an error interval due to truncation or rounding	Rotate a 2D shape from a given point Reflect a shape in a given line Translate a shape by a given vector Enlarge a shape by a given scale factor from a centre of enlargement Recognise and describe transformations Recognise and draws plans and elevations of 3D shapes Use and interpret maps and scale drawings Understand, measure and draw bearings Use the standard ruler and compass constructions: Bisect and angle, construct a perpendicular line, construct angles of 90°, 45°, Bisect a line segment Find and describe regions satisfying a combination of loci
GCSE Assessment Objectives	Edexcel Two Year Foundation Scheme of Work					
MAPs	Unit 1 Rounding, indices and roots Factors, multiples and primes Unit 2 Algebra	Unit 3 Averages and range Unit 4 Fractions and percentages	Unit 5 Angles, Pythagoras and trigonometry	Unit 6 Graphs	Unit 7 Perimeter, area and volume. Accuracy and bounds	Unit 8 Transformations and constructions

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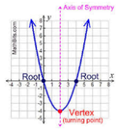
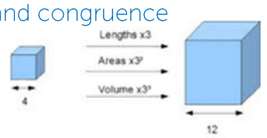
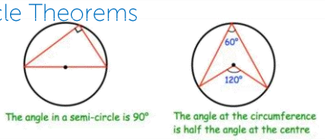
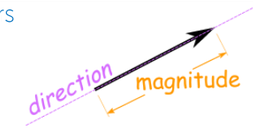
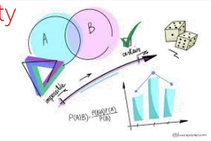
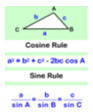
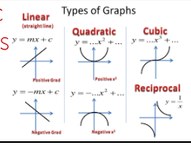
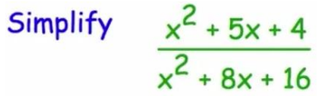
YEAR 11 CURRICULUM JOURNEY

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Topic	Further Algebra 	Similarity and congruence 	Statistics 	Circle Theorems 	Vectors 	
	Probability 	Further Trigonometry 	Quadratic, cubic and circle graphs 	Algebraic fractions and surds 	Direct and inverse proportion 	
Key Knowledge, Skills & Understanding	Factorise quadratic expressions Solve quadratic equations by factorising, completing the square, using the quadratic formula and by plotting the graph Solve simultaneous equations Solve inequalities Write probabilities using fractions, decimals or percentages Understand and use experimental and theoretical probability List the outcomes for single events Find probabilities from sample space diagrams, Venn diagrams, probability tress and two-way tables. Calculate the probability of independent and dependant combined events.	Prove that two triangles are congruent Prove that two shape are similar Understand the effect of enlargement on angles, perimeter, area and volume. Find missing lengths, areas and volumes in similar 3D solids Know the relationship between linear, area and volume scale factors of similar shapes. Recognise, sketch and interpret graphs of trigonometric functions. Apply transformation of functions to trigonometric graphs. Know and apply Area = $\frac{1}{2}ab \sin C$ Know and use the sine and cosine rules	Decide on what data to collect and what analysis is needed Understand what is meant by sample and population Identify possible sources of bias Construct and interpret cumulative frequency graphs Draw and interpret boxplots Construct and interpret histograms Sketch a quadratic graph, identifying roots, y-intercept and turning points Sketch graphs of simple cubic functions Solve simultaneous equations graphically Solve quadratic inequalities	Recall the definition of a circle and identify all parts on a circle Prove and use all circle theorems Select and apply construction techniques and understanding of loci to draw graphs based on circles and perpendicular lines Find the equation of a tangent to a circle Recognise and construct the graph of a circle Rationalise the denominator involving surds Simplify algebraic fractions Rearrange difficult formulae Show algebraic proof using consecutive integers Use function notation Find the inverse of a function Use composite functions	Understand and use vector notation Represent vectors, combinations and vectors and scalar multiples in plane pictorially Calculate the sum of vectors Find vector lengths using Pythagoras' Theorem Solve geometric problems in 2D where vectors are divided in a given ratio Produce geometric proofs to prove points are collinear and vectors/lines are parallel Recognise, sketch and interpret graphs of exponential functions Explore and solve problems of growth and decay Estimate the area under a graph and interpret gradients of tangents Recognise graphs showing direct and inverse proportion Set up and use equations to solve direct and inverse proportion problems	
GCSE Assessment Objectives	Edexcel Two Year Foundation Scheme of Work					
MAPs	Unit 9 Further algebra Unit 10 Probability	Unit 12 Similarity and congruence Unit 13 Further trigonometry	Unit 14 Statistics Unit 15 Quadratic, cubic and circle graphs	Unit 16 Circle theorems Unit 17 Algebraic fractions and surds	Unit 18 Vectors Unit 19 Direct and inverse proportion	