Aylesbury UTC
Curriculum Map

Subject - Mathematics

		AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
YEAR 9	CONTENT						
	SKILLS						
	THEMES						
YEAR 10	CONTENT	<u>Unit 1 : Number Teaching Time: 16 hours</u> Addition and subtraction (integers, decimals, negative numbers) Multiplication and division (integers, decimals, negative numbers) Ordering numbers/decimals/ fractions in ascending and descending order Order of operations (BIDMAS)	<u>Unit 4 : Fractions, Decimals and Percentages Teaching Time: 13 hours</u> Use diagrams to find equivalent fractions or compare fractions Write fractions to describe shaded parts of diagrams Express a given number as a fraction of another Write a fraction in its simplest form and find equivalent fractions	<u>Unit 6 : Angles Teaching Time: 11 hours</u> Estimate sizes of angles and measure angles with a protractor Determine between Acute, Obtuse and Reflex Angles Know the difference between an equilateral, scalene and isosceles triangle Identify quadrilaterals by using angle properties	<u>Unit 9 : Graphs Teaching Time: 14 hours</u> Use function machine or input-output diagrams Specify points in all 4 quadrants in 2D Find the co-ordinates of the mid-point of a line segment Read values from straight line graphs for real life situations Draw straight line graphs for real life situations	<u>Unit 11 : Ratio and Proportion Teaching Time: 9 hours</u> Write ratios in their simplest form Share a quantity in a given ratio including a 3-part ratio Solve a ratio problem in context Use a ratio to find one quantity when the other is known Apply ratio to problems involving mixing e.g., paint, cement etc. Compare ratios	<u>Unit 14 : Percentage Change, Compound Interest, Rearranging Formula Teaching Time: 7 hours</u> Express a given number as a percentage of another number Calculate Percentage Profit or Loss Repeated Percentage Change

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		Rounding to the nearest 10, 100, etc and rounding to significant figures and decimal places Estimating/approximating answers to calculations **Unit 1 End of Topic Assessment** <u>Unit 2 : Algebra</u> <u>Teaching Time: 11 hours</u> Use notation and symbols correctly Write an expression Simplify an expression – collecting like terms Multiply two simple algebraic expressions such as 2a x 3b etc…. Use Index Laws when x or ÷ algebraic terms Expanding Single Brackets Simplifying Expressions with squares and cubes Simplify Expressions with Brackets Factorise with Single Brackets	Order fractions, by using a common denominator Compare fractions Convert between mixed numbers and improper fractions Add and subtract fractions Add and subtract fractions and write the answer as a mixed number Multiply and divide an integer by a fraction Multiply and divide a fraction by an integer, including finding fractions of quantities Understand and use unit fractions as multiplicative inverses Multiply fractions: simplify calculations by cancelling first Divide a fraction by a whole number and another fraction Compare and order fractions, decimals and integers, using inequality signs Understand that a percentage is a fraction in hundredths	Use properties of angles on a straight line, vertically opposite, in triangles including isosceles triangle properties, in a quadrilateral Find missing angles using the properties of corresponding and alternate angle Know that co-interior or supplementary angles + up to 180° Understand 'regular' and 'irregular' as applied to polygons Use the sum of angles of irregular polygons Calculate and use the sums of the interior angles of polygons Calculate and use the angles of regular polygons Use the sum of the interior angles of an n-sided polygon Use the sum of the exterior angles of any polygon is 360° Use the sum of the interior angle and	Find the gradient of a straight line from real life situations Plot and draw graphs of y = a, x = a, y = x and y = –x Recognise straight-line graphs parallel to the axes Recognise that equations of the form y = mx + c correspond to straight-line graphs in the coordinate plane Plot and draw graphs of straight lines of the form y = mx + c using a table of values Identify and interpret gradient from an equation y = mx + c Find approximate solutions to a linear equation from a graph **Unit 9 End of Topic Assessment** <u>Unit 10 : Transformations</u> <u>Teaching Time: 11 hours</u> Understand that rotations are specified by a centre, an angle	Write ratios in the form 1 : m or m : 1 Write a ratio as a fraction Use and apply the results of Density, Pressure and Speed for Compound Measures Work out which product is the better buy Scale up recipes Convert between currencies Solve proportion problems **Unit 11 End of Topic Assessment** <u>Unit 12 : Pythagoras and Trigonometry</u> <u>Teaching Time: 7 hours</u> Understand, recall and use Pythagoras' Theorem in 2D Justify if a triangle is right-angled or not Calculate the length of the hypotenuse and of a shorter side in a right-angled triangle including decimal lengths	Use Compound Interest Rearrange formula to change the subject **Unit 14 End of Topic Assessment** <u>Unit 15 : Plans, Elevations and Bearings</u> <u>Teaching Time: 12 hours</u> Understand clockwise and anticlockwise Measure and draw lines to the nearest mm Measure and draw angles to the nearest degree Know and use compass directions Draw sketches of 3D solids Know the terms face, edge, vertex Understand and draw front and side elevations of shapes made from simple solids **Unit 15 End of Topic Assessment plus Revision and**

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		Substitute numbers into expressions including worded formula **Unit 2 End of Topic Assessment** <u>Unit 3 : Graphs, Tables and Charts</u> <u>Teaching Time: 19 hours</u> Calculate the total frequency from a frequency table Read off frequency values from a frequency table Find greatest and least values from a frequency table Identify the mode from a frequency table Identify the modal class from a grouped frequency table Produce and interpret pictograms Produce and interpret Line Graphs Find greatest and least values from a bar chart or table Identify the mode from a bar chart	Express a given number as a percentage of another number Convert between fractions, decimals and percentages Order fractions, decimals and percentages, including use of inequality signs **Unit 4 End of Topic Assessment** <u>Unit 5 : Equations, Inequalities and Sequences</u> <u>Teaching Time: 14 hours</u> Solve simple equations including those with integer coefficients, in which the unknown appears on either side or on both sides of the equation which contain brackets, including those that have negative signs occurring anywhere in the equation, and those with a negative solution with one unknown, with integer or fractional coefficients	exterior angle is 180° **Unit 6 End of Topic Assessment** <u>Unit 7 : Averages and Range</u> <u>Teaching Time: 7 hours</u> Construct and interpret frequency tables, bar charts, pie charts and pictograms Work out mean, median, mode and range for non-tabulated data Interpret mean, median and range from a frequency table Interpret the modal class and estimate of the mean from a grouped frequency table **Unit 7 End of Topic Assessment** <u>Unit 8 : Perimeter, Area and Volume</u> <u>Teaching Time: 10 hours</u> Find the perimeter of Rectangles and triangles	and a direction of rotation Find the centre of rotation, angle and direction of rotation and describe rotations fully using the angle, direction of turn and centre Rotate and draw the position of a shape after rotation about (0 , 0) Understand that translations are specified by a distance and direction using a vector Translate a given shape by a vector Use column vectors to describe and transform 2D shapes Understand that distances and angles are preserved under rotations and translations Understand that reflections are specified by a mirror line Identify correct reflections Identify the equation of a line of symmetry	Calculate the length of a line segment given a pair of points Understand, use and recall the trigonometric ratios sin, cos, tan and apply them to find angles and lengths in triangles Use trig ratios to find the angles of elevation and depression **Unit 12 End of Topic Assessment** <u>Unit 13 : Probability</u> <u>Teaching Time: 12 hours</u> Distinguish between events which are impossible, unlikely, even chance, likely and certain to occur Mark events and/or probabilities on a probability scale of 0 to 1 Find the probability of an event happening Add simple probabilities	**End of Year 10 Exam**

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		Interpret and discuss any data Measure and draw angles to the nearest degree Construct and interpret pie charts Draw and interpret Frequency Polygons Draw Scatter Graphs Interpret points on a scatter graph Identify outliers Draw Lines of Best Fit and use this to make predictions Distinguish between positive, negative and zero correlation **Unit 3 End of Topic Assessment**	Rearrange simple equations Substitute into a formula, and solve the resulting equation Find an approximate solution to a linear equation using a graph Solve angle or perimeter problems using algebra Show inequalities on number lines Write down whole number values that satisfy an inequality Solve Linear Inequalities Recognise sequences from diagrams and draw the next term in a pattern sequence Find the next term in a sequence, including negative values Find the nth term for a sequence **Unit 5 End of Topic Assessment**	Parallelograms and trapeziums Compound shapes Use and apply the formula for Area of a Triangle Area of a Parallelogram Area of a Trapezium Calculate areas and perimeters of compound shapes made from triangles and rectangles Identify and name common solids such as cube, cuboid, cylinder, prism, pyramid, sphere, cone Sketch nets of cuboids and prisms Use and apply the formula for volume of a cuboid Find the volume of a prism including triangular prism, cube and cuboid **Unit 8 End of Topic Assessment**	Understand that an enlargement is specified by a centre and a scale factor Enlarge a given shape using (0 , 0) as the centre of rotation Enlarge a shape by a positive scale factor Enlarge a shape by a fractional scale factor Understand that similar shapes are enlargements of each other, and angles are preserved **Unit 10 End of Topic Assessment**	Identify different mutually exclusive outcomes and know that the sum of the probabilities of all outcomes is 1 Use 1 – p as the probability of an event not happening where p is the probability of the event happening Find a missing probability from a list or table Find the probability of an event happening using relative frequency Work out probabilities from Venn Diagrams Use Tree Diagrams to calculate the probability of two dependent events **Unit 13 End of Topic Assessment**	
	SKILLS	Students will understand and appreciate order and size of numbers, estimate	Students will understand using an appropriate method how to convert between	Students will estimate to determine accuracy with measurement and use and apply	Students will be able to interpret information from real life graphs.	Students will apply knowledge of ratios to problems in a real-life context..	Calculate Percentage in relation to Profit, Loss or Interest in context.

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		the answers to calculation and check by giving an approximate solution for validity	FDP and also order FDP by converting between FDP.. Students will be able to calculate using the 4 operations for Fractions including Mixed Numbers, Students will be able to solve equations by either the inverse method or balance method.	properties of angles. Students will calculate averages and interpret results in a real-life context. Students will know the difference between Perimeter and Area and calculate both in a real life context.	Students will understand the relationship between similar shapes and angles	Students will understand the relationship between the longest side in a right-angled triangle and the other two sides and determine size of angles by using trig rations. Students will determine probability in terms of single or multiple events..	Students will interpret 2D and 3D scale drawing.
	THEMES						
YEAR 11	CONTENT	<u>Unit 16: Quadratic Equations, Factorising, Graphs Teaching Time: 9 hours</u> Multiplying together 2 expressions with brackets Squaring a Linear Expression $(x + 2)^2$ Factorising Quadratic Expressions of the form $x^2 + bx + c$ Solving Quadratic Equations by Factorising Find the roots of a Quadratic Function	<u>Unit 19: Similarity and Vectors Teaching Time: 14 hours</u> Identify shapes which are similar Understand similarity of triangles and other plane shapes Identify Scale Factor of an enlargement of a shape as the ratio of the lengths of 2 corresponding sides Solve problems to find missing lengths in similar shapes	REVISION	REVISION		

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		Plot Quadratic Graphs and find approximate solutions to a quadratic equation using a graph Identify and interpret roots, intercepts and turning points of quadratic graphs **Unit 16 End of Topic Assessment** <u>Unit 17: Perimeter, Area and Volume</u> <u>Teaching Time: 6 hours</u> Rearrange formulae to change the subject Identify and apply circle definitions – radius, chord, diameter, tangent Know and apply formulae to calculate areas of triangles, parallelograms, trapeziums Know the formulae for Circumference of a Circle, Area of a Circle Calculate perimeters of 2D shapes Calculate Volume of Prims	**Unit 19 End of Topic Assessment** <u>Unit 20: Graphs of Cubic and Reciprocal Functions, Simultaneous Equations</u> <u>Teaching Time: 5 hours</u> Plot and interpret reciprocal graphs Plot and interpret cubic graphs Solve Simultaneous Equations **Unit 20 End of Topic Assessment**				

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		Unit 17 End of Topic Assessment Unit 18: Fractions, Reciprocals, Standard Form, Zero and Negative Indices Teaching Time: 10 hours Adding and Subtracting Mixed Number Fractions Multiplying Mixed Number Fractions Dividing Mixed Numbers by whole numbers and visa versa Finding the reciprocal of an integer, decimal or fraction **Unit 18 End of Topic Assessment**					
	SKILLS	Students will recognise and interpret quadratic, cubic and reciprocal graphs. Students will apply formula for Area and Circumference of a Circle. Students will be able to find the reciprocal of whole	Students will be able to identify scale factor as an enlargement of a shape. Students will be able to solve simultaneous equations in a relevant context.				

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		numbers, decimals and fractions.					
	THEMES						
YEAR 12 RESIT	CONTENT	Students complete an assessment – non calculator and calculator to identify strengths and weaknesses . This informs the content delivered from September – November					
	SKILLS	Students will develop the required exam skills and know where and why marks are allocated for questions and topics					
	THEMES						
YEAR 13	CONTENT						
	SKILLS						

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	THEMES						