Year 8 ~ Curriculum Map for Maths

	What are the intended aims for this year's curriculum? To build upon year 7 knowledge and finish introducing the main Mathematics topics so that students have a basic understanding of all the topics they will see at GCSE level													
	Term 1		Term 2		Term 3		Term 4		Term 5		Term 6	
	Topic(s): **Numbers** Number properties Positive and negative numbers Rounding and estimates	Aim of A&R	Topic(s): **Geometry** Length and area 3D shapes Compound measures	Aim of A&R	Topic(s): **Numbers** – Calculation with fractions **Probability**	Aim of A&R	Topic(s): **Algebra** Algebraic manipulation Solving equations	Aim of A&R	Topic(s): **Geometry** Angles Transformations	Aim of A&R	Topic(s): **Statistics**	Aim of EoY exam
'Big idea(s)' / fundamental concepts	**Number:** Understand and use index notation, prime number decomposition, HCF and LCM Understand and use directed numbers Round and estimate values		**Geometry**: 2D shapes measurements including compound shapes and parts of shapes 3D shapes measurements and construct Speed, density and pressure calculations		**Numbers**: Calculating with fractions including the four operations **Probability**: Calculate probability of an event in different scenarios		**Algebra:** Manipulate algebraic expressions and formulae Solve equations to find unknown Solve inequalities to find range of unknown		**Geometry**: Measure and calculate angles in geometric diagrams using linked angles Transform a shape (the object) into an image using basic transformations		**Statistics**: Calculate averages and dispersion of data Represent data graphically clearly and correctly with appropriate graphical representation Identify correlation between two quantities empirically	
Knowledge to be learnt	**Numbers**: Index notation and root notation (square and cube root) Prime factors decomposition Methods to find HCF and LCM Interpret negative numbers Degrees of accuracy Find estimates of numbers with rounding	Assess Term 1 Material and identify gaps	**Geometry:** 2D shape properties, definitions, perimeter and key formulas for calculating areas 3D shape properties, definitions, key formulas for calculating volume. Interpret plans, elevations and nets Representing motion graphically Formulas for speed, density and pressure Compound units	Assess 80% Term 2 and 20% Term 1 Material and identify gaps	**Numbers**: Interpret fractions as numbers and parts of wholes and combine with knowledge of basic operations Link fractions and division **Probability**: Probability scale and likelihood of an outcome Understand relationship between events (mutual exclusivity, combined events and relative frequency)	Assess 60% Term 3 ,20% Term 1 and 20% Term 2 Material and identify gap	**Algebra:** Understand that a letter represents a variable. Understand the difference between an expression, equation, formula, term, function and identity Form expressions from situations described in words. Use and interpret algebraic notation, including: - ab in place of a × b - 3y in place of y + y + y and 3 × y - a2 in place of a × a, a3 in place of a × a × a; a2b in place of a × a × b - in place of b ÷ a - coefficients written as fractions rather than as decimals - brackets Factorised form as product of factors Inverse operations	Assess40% Term 4, 20% Term 3 ,20% Term 1 and 20% Term 2 Material and identify gap	**Geometry**: Standard angle facts and formulas Use angle properties in shapes including parallel lines Names and properties of polygons Similar and congruent shapes Vector notation Identify equations of lines on a coordinate grid Basic transformations: reflection, rotation, translation and enlargement	N/A	**Statistics**: Measures of averages: mode, median and mean Measures of dispersion: range Two-way tables Pie charts Scatter graphs	Assess understanding of entire term and identify gaps to be worked on in Term 6
Key vocabulary	**Numbers:** square, cube, power, index, roots, prime number, prime factor decomposition, factors, multiples, HCF, LCM, negative numbers, round, significant figures, degree of accuracy, error intervals		**Geometry**: area, perimeter, circumference, arc length, radius, diameter, nets, plans, elevations, cuboid, prism, cylinder, cube, surface area, speed, density, pressure		**Numbers**: mixed fractions, improper fractions, denominator, reciprocals **Probability**: outcome, event, sample space, mutually exclusive, Venn diagram, frequency, relative frequency		**Algebra:** term, expression, equation, formula, identity, substitute, simplify, like terms, expand, factorise, solve, linear equation, unknown, solution		**Geometry**: Angles at a point, angles on a line at a point, vertically opposite angles, corresponding angles, alternate angles, co-interior angles, interior angles, exterior angles, reflection, mirror line, translation, vector, rotation, centre, direction, enlargement, scale factor		**Statistics**: Mean, median, mode, range, stem and leaf diagram, frequency table, two-way tables, pie chart, scatter graph, line of best fit, positive correlation, negative correlation	

The role of reading and comprehension	Identify command words such as evaluate, round, estimate		Comprehension for problem solving Interpret a labelled diagram		Comprehension of worded probability problems and ability to interpret data mathematically		Interpret worded problems with algebraic notations		Interpret labelled diagrams		Read and interpret tables Read and interpret different data representations	
The role of independent extended writing	*N/A*		Develop logical reasoning in writing for geometric proof in problem solving		Use of precise probability language to qualify outcomes and events		Write out fully an algebraic proof with clear logical transitions and clear conclusion		Characterise fully transformations Construct fully and accurately geometric proof		Express clearly and correctly what different data representations show	
The role of maths/ numeracy	Numerical methods extended		Diagrammatical mathematical skills		Fluency with fractions and percentages in an applied context Systematic and exhaustive listing		Fluency with operations		Diagrammatic mathematics		Visual representations of data	
Links to careers/ aspirations	Finance, Meteorologist		Architecture, building, construction, carpentry, decoration, packaging design, 3D modelling		Statistician, Insurance, Risk analysis, Market research analyst		Scientist, Actuary, Computer Scientist, Carpenter, Banker		Surveyor, graphic designer, artist, engineer		Statistician, Finance, Research Analyst, Scientist, Data Scientist, Doctor, Marketing	
Core skills	To be able to: **Numbers**: Find integer power and roots Use index laws for multiplication and division Recognise, list and define prime numbers Decompose into prime factors Find the HCF and LCM of a set of numbers Compare and order positive and negative integers using inequalities Interpret negative values in context Add and subtract positive and negative integers Substitute negative integers into expressions and formulae Apply BIDMAS with negative integers Round to nearest whole number, to a given number of decimal places and to a given number of significant figures Estimate roots ***Extension***: Problem solving		To be able to: **Geometry**: Solve function problems using area and perimeter for rectangles Find area of a parallelogram, triangle, and trapezium Solve problems related to perimeter and area including finding missing length given an area and compound shapes Calculate circumference and area of a circle Complete nets of 3D shapes Identify properties of 3D shapes Construct and interpret plans and elevations of 3D shapes Calculate the volume of a cuboid, prism and cylinder Calculate the surface area of cuboids and prisms Convert between units of area and volume Interpret speed-time graphs and distance-time graph Find speed from distance-time graphs Convert compound units for speed Calculate speed, distance and time Calculate density, mass and volume Calculate pressure, force and area ***Extension***: Problem solving		To be able to: **Numbers**: Convert between mixed numbers and improper fractions Compare and order fractions Add and subtract fractions, mixed numbers and improper fractions Recognise, find and understand reciprocals Multiply and divide fractions **Probability**: Place probabilities on a probability scale List systematically outcomes including sample spaces Apply property that the probability of mutually exclusive outcomes sum to 1 Calculate probabilities from sample spaces and two way table Interpret and complete Venn diagrams including probability calculations Interpret and use relative frequencies		To be able to: **Algebra:** Identify a term, expression, equation, formula and identity Substitute positive and negative integers into expressions and formula, including with powers Form an expression Simplify expressions by collecting like terms including power Simplify expressions involving multiplication and division Multiply a single term over a single bracket Expand and simplify multiple single brackets Factorise by taking out common factor Solve one and two step linear equations Use equations to solve area and perimeter problems Solve linear equations with unknowns on both sides Check solution to an equation using substitution Solve two step linear inequalities and represent solutions on a number line Lis integers that satisfy an inequality ***Extend*:** multiple brackets and quadratic expressions; algebraic proof		To be able to: **Geometry:** Measure and draw angles accurately Identify parallel and perpendicular lines Solve angle problems using angle facts including missing angles Find angles in parallel lines Find and use the sum of interior angles in a polygon Find and use exterior angles in a regular polygon Draw a reflection of a 2D shape given a line and on a coordinate grid with the equation of the mirror line Draw the translation of a 2D shape by a given vector Rotate a 2D shape given centre, angle and direction Enlarge a 2D shape given centre and scale factor Identify and give key characteristics for basic transformations		To be able to: **Statistics**: Find mode, median, mean and range from a list of data, of two data sets, from a stem and leaf diagram, from a discrete frequency tables Find data given information on averages and ranges Construct and complete stem and leave diagrams, frequency tables, two-way tables, pie charts Complete and interpret a scatter graph including scatter graphs, correlation and line of best fit	

Dept. enrichment activities											
Home learning opportunities	Understanding temperatures in all seasons Understanding credit and debit positions in bills and accounts Estimating quantities and understanding degrees of accuracy		Finding 2D and 3D shapes in objects Constructing 3D shapes from nets Measuring lengths and objects		Board games and card games with a random luck element		Understanding basic accounting including profits and losses Understanding energy bills Calculating what can be bought with a given amount of money Budgeting		Carpentry projects using angles Art projects using shape transformations		Reading newspaper articles presenting data Calculating averages in sports including activity tracking analysis	