Year 8 Curriculum Overview [2021-2022]
Subject – Maths

	Knowledge & Understanding			Literacy Skills	Employability Skills [if any]	Assessment Opportunities
	Composites	**Components** [includes understanding of KEY concepts & subject specific vocab]	**Formal Retrieval** [if any]	**Opportunities for developing literacy skills**		
HT1 Proportional reasoning	**Ratio and scale** (weeks 1 and 2)	• Understand ratio and its link to multiplication • Use ratio notation • Reduce ratios to simplest form • Solve ratio problems • Calculate the circumference of a circle **Ext** • **Express any ratio in the form 1:*n***	• Flashback 4 – once per week • Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week	• Key words – learned and understood • Encourage use of subject language • Questioning • Pupil explanations and reasoning	• Chef • Working in the catering industry • Business • Architecture • Surveyor • Financial • Currency exchange • Hair dressers • Medical	• End of block formative assessment
	Multiplicative scale (weeks 3 and 4)	• Use scale factors, linking to ratio, to solve simple direct proportion problems • Convert between currencies, including using graphs • Draw and interpret scale diagrams and maps **Ext** • **Explore direct proportion graphs**				• End of block formative assessment
	Multiplying and dividing fractions (weeks 5 and 6)	• Multiply and divide a fraction by an integer • Multiply and divide a fraction by a fraction • Understand and use the reciprocal				• End of block formative assessment

		Ext • **Multiply and divide mixed numbers** • **Multiply and divide simple algebraic fractions** **Adding and subtracting fractions** • **Understand representations of fractions** • **Convert mixed numbers and improper fractions** • **Understand and use equivalent fractions** • **Add and subtract fractions with the same and a different denominator** • **Add and subtract a combination of fractions and decimals** • **Add and subtract improper fractions & mixed numbers** **Ext Add and subtract simple algebraic fractions**			• Business • Construction work • Retail • Hotel and catering	
HT2 Representation	**Working in the cartesian plane** (weeks 7 to 9)	• Plot and interpret straight line graphs • Understand and use the equations of a straight line, including lines parallel to the axes • Make links between direct proportion and straight lines in the form $y = kx$ • Model situations by translating them into expressions, formulae and graphs **Ext** • **Find the mid-point of a line segment**		• Key words – learned and understood • Encourage use of subject language • Questioning • Pupil explanations and reasoning • Law • Medical		• End of block formative assessment

		• **Explore gradient** • **Explore non-linear graphs**			• Jobs that require a statistics background • Data Analyst	
	<u>Representing data</u> (weeks 10 and 11)	• Draw and interpret scatter graphs • Understand correlation • Draw and use lines of best fit • Understand grouped and ungrouped, discrete and continuous data • Design and use one and two-way tables				• End of block formative assessment
	<u>Tables & probability</u> (week 12)	• List outcomes using sample space diagrams for one and two events • Find probabilities using tables and Venn diagrams **<u>Ext</u>** • **Use the product rule for counting**				Summative end of term assessment

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HT3 Algebraic Techniques	**Brackets, equations and inequalities** (Weeks 1 to 4)	• Expand, and factorise into, single brackets • Form and use expressions, formulae and identities • Form and solve equations and inequalities with and without brackets • Distinguish between equations, expressions, formulae and identities • **Ext: Expand a pair of binomials** • **Solve equations and inequalities with unknowns on both sides**	• Flashback 4 – once per week • Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week	• Key words – learned and understood • Encourage use of subject language • Questioning Pupil explanations and reasoning • Medical		• End of block formative assessment
	Sequences Week 5	• Generate sequences given a word • Generate a sequence given a simple rule • Find the rule for the nth term of a linear sequence **Ext: Generate sequences given a complex algebraic rule**				• End of block formative assessment
	Indices Week 6	• Adding and subtracting expressions with indices • Simplifying algebraic expressions by multiplying and dividing indices • Use the addition and subtractions laws for indices **Ext: Explore powers of powers**				• End of block formative assessment

HT4 Developing number	**<u>Fractions and percentages</u>**	• Convert fluently between key fractions, decimals and percentages, and calculate them without a calculator • Calculate fractions, decimals and percentages of amounts using calculator methods • Calculate percentage increase and decrease using a multiplier • Express one number as a fraction or percentage of another • Use percentage change **<u>Ext:</u> Use reverse percentages to find the original amount**	• Flashback 4 – once per week • Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week	• Key words – learned and understood • Encourage use of subject language • Questioning Pupil explanations and reasoning	• Business • Retail • Computing • Textiles	• End of block formative assessment
	<u>Standard index form</u>	• Convert between numbers in ordinary and standard form • Compare numbers given in standard form • Mentally calculate with numbers in standard form • Use the four operations with standard form **<u>Ext</u> Understand and use fractional and negative indices**				• End of block formative assessment
	<u>Number sense</u>	• Develop mental strategies • Convert between metric measures and units • Use estimation, including rounding to a given number of decimal places • Use the order of operations **<u>Ext:</u> Convert between units of area and volume and Use error interval notation**				Summative end of term assessment

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HT5 Developing geometry	**<u>Angles in parallel lines and polygons</u>**	• A review of basic angle facts • Understand and use angles in parallel lines and angles • Revisit geometric notation • Work out angles in special quadrilaterals • Find and use the sum of interior and exterior angles of a polygon • Prove simple geometric facts **<u>Ext</u>** • **Perform standard constructions including perpendiculars** **<u>Angles</u>** • Understand angles as a measure of turn • Classify, measure and draw angles between 0 and 360 degrees • Identify parallel and perpendicular lines • Recognise properties and types of shapes. E.g. Triangles and quadrilaterals	• Flashback 4 – once per week • Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week	• Key words – learned and understood • Encourage use of subject language • Questioning Pupil explanations and reasoning	• Construction • Surveyor • Architecture • Carpet fitter • Decorator	• End of block formative assessment

		• Identify polygons up to Decagons. • Construct triangles using a compass (SSS, SAS, ASA) **<u>Ext:</u> Construct perpendicular and angle bisectors and understand and construct loci.** • Understand and use the sum of angles around a point and on a straight line. • Understand and use the equality of vertically opposite angles. • Know and apply the sum of angles in a triangle and in a quadrilateral. Use this skill and apply to problem solving questions. • Find and apply the sum of angles in a polygons. • Investigate and use angles in parallel sides. Use known facts to obtain simple proofs.				
	<u>Area of trapezia and circles</u>	• Review of shape work covered in year7 • Calculate the area of a trapezium • Calculate the area of a circle, and the area of parts of a circle • Use significant figures • Calculate the area of compound shapes				• End of block formative assessment

	<u>Line symmetry and reflection</u>	• Recognise line symmetry in polygons and other shapes • Reflect shapes in horizontal, vertical and diagonal lines • Reflect shapes using equations of lines				• End of block formative assessment
HT6 Reasoning with data	**<u>The data handling cycle</u>** (Weeks 1 to 4)	• Understand and use primary and secondary sources of data • Collect data, including using questionnaires • Interpret and construct statistical diagrams including multiple bar charts • Construct and interpret pie charts • Compare distributions using charts • Identify misleading graphs **Pie charts from year 7** • **Interpret and draw pie charts.**	• Flashback 4 – once per week • Mathsbox skills check 10 questions – once per week • Mathsbox skills check 20 questions HWK – once a week	• Key words – learned and understood • Encourage use of subject language • Questioning Pupil explanations and reasoning	• Data Analyst • Statistician	
	<u>Measures of location</u> (Weeks 5 and 6)	• Revisit the median and mean, including finding the total given the mean • Find the mean of grouped data • Work out the mode and modal class • Choose the appropriate average • Comparing distributions using measures **<u>Ext</u>** • **Find unknown data values given the mean or changes in the mean**				Summative end of term assessment

		• **Explore histograms for unequal groups** • **Find the median from a table of values**				