Mathematics Year 8 Curriculum Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	**Proportional Reasoning**						**Representations**					
	Ratio and scale		Multiplicative change		Multiplying and dividing fractions		Working in the Cartesian plane			Representing data		Tables & Probability
Spring	**Algebraic techniques**						**Developing Number**					
	Brackets, equations and inequalities				Sequences	Indices	Fractions and percentages			Standard index form		Number sense
Summer	**Developing Geometry**						**Reasoning with Data**					
	Angles in parallel lines and polygons			Area of trapezia and circles		Line symmetry and reflection	The data handling cycle					Measures of location

	Autumn		Spring		Summer	
	Learning Cycle 1	**Learning Cycle 2**	**Learning Cycle 3**	**Learning Cycle 4**	**Learning Cycle 5**	**Learning Cycle 6**
Topic	Proportional Reasoning	Representations	Algebraic Techniques	Developing Number	Developing Geometry	Reasoning with Data
Critical Prior Knowledge	6RP1 – solve problems involving the relative sizes of two quantities 6RP4 – solve problems involving unequal sharing & grouping using knowledge of fractions & multiples Year 7 learning cycle 3 – adding & subtracting fractions	Year 7 learning cycle 1 – represent functions graphically Year 7 learning cycle 3 – metric conversions Year 7 learning cycle 5 – multiplicative relationships Year 7 learning cycle 6 – probability & Venn diagrams	Year 7 learning cycle 1- algebraic notation & solving one-step equations Year 7 learning cycle 4 – substitution with directed number, form & solve two-step equations Year 7 learning cycle 6 – related algebraic expressions & prime factorisation	Year 7 learning cycle 2 – interchange between fractions & decimals below 1, interchange between fractions, decimals & percentages up to 100% Year 7 learning cycle 3 – find percentages of amounts (mental & calculator)	Year 7 learning cycle 5- geometric notation, parallel & perpendicular lines, name & construct polygons, properties of triangles & quadrilaterals & angle properties	Year 7 learning cycle 3 – solve problems with line charts & bar charts Year 7 learning cycle 5 – construct & interpret pie charts Year 7 learning cycle 2 – find the median & range Year 7 learning cycle 3 – find the mean
Overall Intent (Big ideas & key concepts)	Ratio & scale *Multiplicative change* Multiplying & dividing fractions	Working in the Cartesian plane *Representing data* Tables & Probability	Brackets, equations & inequalities *Sequences* Indices	Fractions & percentages *Standard index form* Number sense	Angles in parallel lines & polygons *Area of trapezia & circles* Line symmetry & reflection	The data handling cycle *Measures of location*

	Autumn		Spring		Summer	
	Learning Cycle 1	**Learning Cycle 2**	**Learning Cycle 3**	**Learning Cycle 4**	**Learning Cycle 5**	**Learning Cycle 6**
Topic	Proportional Reasoning	Representations	Algebraic Techniques	Developing Number	Developing Geometry	Reasoning with Data
Essential Knowledge milestones (What students must master)	Understand the meaning & representation of ratio Understand & use ratio notation Solve problems involving ratios of the form $1 : n$ (or $n : 1$) Solve proportional problems involving the ratio $m : n$ Divide a value into a given ratio Express ratios in their simplest integer form Express ratios in the form $1 : n$ Compare ratios & related fractions Understand π as the ratio between diameter & circumference Understand	Work with coordinates in all four quadrants Identify & draw lines that are parallel to the axes Recognise & use the line $y = x$ Recognise & use lines of the form $y = kx$ Link $y = kx$ to direct proportion problems **Explore the gradient of the line $y = kx$** Recognise & use lines of the form $y = x + a$ Explore graphs with negative gradient ($y = -kx$, $y = a - x$, $x + y = a$) Link graphs to linear sequences Plot graphs of the form $y = mx + c$	Form algebraic expressions Use directed number with algebra Multiply out a single bracket Factorise into a single bracket Expand multiple single brackets & simplify **Expand a pair of binomials** Solve equations, including with brackets Form & solve equations with brackets Understand & solve simple inequalities Form & solve inequalities **Solve equations & inequalities with unknowns on both sides** **Form & solve equations &**	Convert fluently between key fractions, decimals & percentages Calculate key fractions, decimals & percentages of an amount without a calculator Calculate fractions, decimals & percentages of an amount using calculator methods Convert between decimals & percentages greater than 100% Percentage decrease with a multiplier Calculate percentage increase & decrease using a multiplier Express one number as a	Understand & use basic angles rules & notation Investigate angles between parallel lines & the transversal Identify & calculate with alternate & corresponding angles Identify & calculate with co-interior, alternate & corresponding angles Solve complex problems with parallel line angles Construct triangles & special quadrilaterals Investigate the properties of special quadrilaterals Identify & calculate with sides & angles in special quadrilaterals	Set up a statistical enquiry Design & criticise questionnaires Draw & interpret pictograms, bar charts & vertical line charts Draw & interpret multiple bar charts Draw & interpret pie charts Draw & interpret line graphs Choose the most appropriate diagram for given set of data Represent & interpret grouped quantitative data Find & interpret the range Compare distributions using charts Identify misleading graphs

	Autumn		Spring		Summer	
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	gradient of a line as a ratio *Solve problems involving direct proportion* *Explore conversion graphs* *Convert between currencies* *Explore direct proportion graphs* *Explore relationships between similar shapes* *Understand scale factors as multiplicative representations* *Draw & interpret scale diagrams* *Interpret maps using scale factors & ratios*	**Explore non-linear graphs** **Find the midpoint of a line segment** *Draw & interpret scatter graphs* *Understand & describe linear correlation* *Draw & use line of best fit Identify non-linear relationships* *Identify different types of data* *Read & interpret ungrouped frequency tables* *Read & interpret grouped frequency tables* *Represent grouped discrete data* *Represent continuous data grouped into equal classes*	**inequalities with unknowns on both sides** Identify & use formulae, expressions, identities & equations *Generate sequences given a rule in words* *Generate sequences given a simple algebraic rule* *Generate sequences given a complex algebraic rule* **Find the rule for the nth term of a linear sequence** Adding & subtracting expressions with indices Simplifying algebraic expressions by multiplying indices	fraction or a percentage of another without a calculator Express one number as a fraction or a percentage of another using calculator methods Work with percentage change Choose appropriate methods to solve percentage problems **Find the original amount given the percentage less than 100%** ***Find the original amount given the percentage greater than 100%*** ***Choose appropriate methods to solve***	Understand & use the properties of diagonals of quadrilaterals Understand & use the sum of exterior angles of any polygon Calculate & use the sum of the interior angles in any polygon Calculate missing interior angles in regular polygons **Prove simple geometric facts Construct an angle bisector Construct a perpendicular bisector of a line segment** *Calculate the area of triangles, rectangles & parallelograms* *Calculate the area*	*Understand & use the mean, median & mode* *Choose the most appropriate average* ***Find the mean from an ungrouped frequency table*** ***Find the mean from a grouped frequency table*** *Identify outliers* *Compare distributions using averages & the range*

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Topic	Proportional Reasoning	Representations	Algebraic Techniques	Developing Number	Developing Geometry	Reasoning with Data
	Represent multiplication of fractions Multiply a fraction by an integer Find the product of a pair of unit fractions Find the product of a pair of any fractions Divide an integer by a fraction Divide a fraction by a unit fraction Understand & use the reciprocal Divide any pair of fractions **Multiply & divide improper & mixed fractions Multiply & divide algebraic fractions**	*Represent data in two-way tables* Construct sample spaces for 1 or more events Find probabilities from a sample space Find probabilities from two-way tables Find probabilities from Venn diagrams **Use the product rule for finding the total number of possible outcomes**	Simplifying algebraic expressions by dividing indices Using the addition law for indices Using the addition & subtraction law for indices **Exploring powers of powers**	***complex percentage problems*** *Investigate positive powers of 10* *Work with numbers greater than 1 in standard form Investigate negative powers of 10* *Work with numbers between 0 & 1 in standard form Compare & order numbers in standard form* *Mentally calculate with numbers in standard form* *Add & subtract numbers in standard form* *Multiply & divide numbers in standard form*	*of a trapezium Calculate the perimeter & area of compound shapes (1) Investigate the area of a circle Calculate the area of a circle & parts of a circle without a calculator Calculate the area of a circle & parts of a circle with a calculator Calculate the perimeter & area of compound shapes (2)* Recognise line symmetry Reflect a shape in a horizontal or vertical line (shapes touching the line) Reflect a shape in a horizontal or vertical line (shapes	

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				Use a calculator to work with numbers in standard form **Understand & use negative indices** **Understand & use fractional indices** Round numbers to powers of 10, & 1 significant figure Round numbers to a given number of decimal places Estimate the answer to a calculation **Understand & use error interval notation** Calculate using the order of operations Calculate with money Covert metric measures of length Convert metric	not touching the line) Reflect a shape in a diagonal line (shapes touching the line) Reflect a shape in a diagonal line (shapes not touching the line)	

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				units of weight & capacity **Convert metric units of area** **Convert metric units of volume** Solve problems involving time & the calendar		
Cultural Capital	Year 8 Enriching mathematics 1	Year 8 Enriching mathematics 2	Year 8 Enriching mathematics 3	Year 8 Enriching mathematics 4	Year 8 Enriching mathematics 5	Year 8 Enriching mathematics 6
Mode of Retrieval	Flashback starters Combined unit tests; knowledge & application covering the previous 2 units	Formal assessment of **Summer Term (Yr 7)** – application of knowledge	Flashback starters Combined unit tests; knowledge & application covering the previous 2 units	Formal assessment of **Autumn** Term – application of knowledge	Flashback starters Combined unit tests; knowledge & application covering the previous 2 units	Formal assessment of **Spring** Term – application of knowledge
ECC Student Characteristics	Always **endeavour** to show **resilience**. Be **aspirational**. Be knowledgeable & able to **deeply understand & recall** information easily & be skilled in **applying this knowledge** in a **range of circumstances**. Have **confidence** & communicate effectively Know how to behave well & **respect other members** of our community when sharing ideas remembering to be mutually **tolerant** & **empathetic**					

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Connection to future learning (When is this developed / revisited)?	Year 9 learning cycle 2 Year 9 learning cycle 5	Year 9 learning cycle 1 Year 9 learning cycle 5 Year 9 learning cycle 6	Year 9 learning cycle 1 Year 9 learning cycle 6	Year 9 learning cycle 3 Year 9 learning cycle 4 Year 9 learning cycle 6	Year 9 learning cycle 2 Year 9 learning cycle 4	Year 9 learning cycle 6