Long Term Plan: (Maths Y8) 2022-23

Year 8 (subject)	Intent	Students are to be able to "work mathematically" throughout the curriculum by embedding the essential skills of fluency, reasoning and problem solve into each subtopic. Students will now develop the knowledge gained, at Key Stage 2, into more complex and new understanding. Through careful interleaving of topics, students will readily make links between each subtopic, hence strengthening their understanding and mastering the course.
	Assessment strategy	Students will be assessed during the baseline assessment in September, based upon what they have learned to date. They will then be assessed mid-year and finally at the end of the year. These three testing points will be our composite testing. This data will be reported on the system and reported home to parents and carers. Students will then have regular composite testing throughout the year, at the end of each topic. This will be provide teachers with the understanding of strengths, weaknesses and gaps in knowledge in order to support students during their day-to-day learning.

		Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 8 (subject)	Disciplinary knowledge	Building on their knowledge from KS2 and y7 students develop proportional reasoning. Links between ratio and Pi and ratio and gradient are explored. Multiplicative change enables students to solve a variety of real life problems like best buys.	Building on their knowledge from KS2 students will look formally at algebraic rules for straight lines. Students will extend their knowledge of graphs to deal with data. Tables and probability block build on knowledge from y7 and develops it further.	Building on their understanding of equivalence, sequences and powers students will explore these topics further. This will enable to access algebra block in y9 as well as standard form further in y8.	Fractions and percentages block focuses on the relationships between fractions and percentages and both, calculator an non-calculator, methods are explored to enable students to choose most efficient method. Number sense block provides opportunity to revisit a lot of basic	The block builds on KS2 and y7 understanding of angles and area of 2D shapes. Some parts were already covered in Y7 with students following the higher strand but now the knowledge is extended to all students.	The block builds on students' knowledge of statistics and data from KS2. This will enable students to access data topics in y10.

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					skills in a large variety of contexts.		
	Substantive knowledge	Proportional Reasoning: • Ratio and scale • Multiplicative change • Multiplying and dividing fractions	Representations: • Working in the cartesian plane • Representing data • Tables and probability.	Algebraic Techniques: • Brackets, equations and inequalities • Sequences • Indices	Developing Number: • Fractions and percentages • Standard index form • Number sense	Developing Geometry: • Angles in parallel lines and polygons • Area of trapezia and circles • Line symmetry and reflection	Topic: Reasoning with Data: • The data handling cycle • Measures of location
	Justification	National Curriculum content covered includes: • Make connections between number relationships and their algebraic and graphical representations • Understand that a multiplicative relationship can be represented as a ratio or a fraction • Divide a given quantity into two parts • Solve problems involving direct and inverse proportion • Extend and formalize the knowledge of ratio and proportion in working with measures • Interpret when the structure of a numerical problem requires additive,	National Curriculum content covered includes: • Move freely between different numerical, algebraic, graphical and diagrammatic representations • Develop algebraic and graphical fluency, including understanding linear (and simple quadratic) functions • Make connections between number relationships, and their algebraic and graphical representations • Substitute numerical values into formulae and expressions • Recognize, sketch and produce graphs of linear functions of one variable	National Curriculum content covered includes: • Identify variables and express relationships between variables algebraically • Begin to model situations mathematically and express the results using a range of formal mathematical representations • Substitute numerical values into formulae and expressions, including scientific formulae • Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors • Simplify and manipulate algebraic	National Curriculum content covered includes: • Develop their use of formal mathematical knowledge to interpret and solve problems, including financials mathematics • Work interchangeably with terminating decimals and their corresponding fractions • Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages and work	National Curriculum content covered includes: • Apply the properties of angles at a point, angles at a point on a straight line and vertically opposite angles • Understand and use the relationship between parallel lines and alternate and corresponding angles • Derive and use the sum of angles in a triangle and use it to deduce the angle sum in a ny polygon, and to derive properties or regular polygons • Use and understand conventions for labelling the sides and angles of triangle ABC • Derive and illustrate properties of triangles,	National Curriculum content covered includes: • Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers) • Construct and interpret appropriate tables, charts and diagrams, including frequency tablesm bar charts, pie charts, and pictograms for categorical data, and vertical line (bar) charts for ungrouped

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		multiplicative or proportional reasoning • Use scale factors, scale diagrams and maps • Move freely between different numerical, algebraic, graphical and diagrammatic representations • Consolidate students' numerical and mathematical capability from KS2 and extend their understanding of the number system and place value to include decimals and fractions • Select and use appropriate calculation strategies to solve complex problems • Use the four operations, including formal written methods applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative	• Describe, interpret and compare observed distributions of a single variable through appropriate graphical representation involving discrete, continuous and grouped data • Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts and pictograms for categorical data, and vertical line charts for ungrouped and grouped numerical data • Describe simple mathematical relationships between two variables in observational and experimental contexts and illustrate using scatter graphs • Use language and properties precisely to analyse probability and statistics • Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using	expressions to maintain equality by collecting like terms, multiplying a single term over a bracket, taking out common factors, expanding products of two or more binomials • Understand and use standard mathematical formulae • Use algebraic methods to solve linear equations in one variable • Generate terms of a sequence from either a term-to-term o a position-to-term rule • Recognize arithmetic sequences and find the nth term • Recognize geometric sequences and appreciate other sequences that arise • Use and interpret algebraic notation • Use language and properties precisely to analyse algebraic expressions • Substitute values in expressions, rearrange and simplify expressions and solve equations.	with percentages greater than 100 • Interpret fractions and percentages as operators • Use integer powers and associated real roots (square, cube etc.), recognize powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations • Interpret and compare numbers in standard form • Use standard units of mass, length, time, money and other measures, including with decimal quantities • Round numbers and measures to an appropriate degree of accuracy • Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation • Use a calculator and other technologies to calculate results accurately and then	quadrilaterals, circles and other plane figures using appropriate language and technologies • Derive and use the standard ruler and compass constructions • Derive and apply formulae to calculate and solve problems involving perimeter and area of triangles, parallelograms, trapezia • Calculate and solve problems involving perimeter of 2D shapes, areas of circles and composite shapes • Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric • Identify properties of, and describe the results of reflections applied to given figures	and grouped numerical data • Describe, interpret and compare observed distributions of a single variable through appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers

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			appropriate language and the 0-1 probability scale • Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities • Use language and properties precisely to analyse probability and statistics		interpret them appropriately		
	Keystone vocabulary	Factor Multiplier Proportional Conversation Improper Equivalent	Co-ordinate Intercept Correlation Estimate Biased Sample space	Inequality Expand Position-to-term Term-to-term Product Base	Interest Reverse Reciprocal Root Significant Nearest	Adjacent Alternate Radius Diameter Congruent Symmetry	Discrete Continuous Frequency Mean Median Mode
	Links to prior learning	Y7 place value and proportion. Y7 fractional thinking. Y9 algebra, Y10 similarity, Y10 proportional change.	Y7 Reasoning with number.	Y7 algebraic thinking	Y7 place value and proportion, Y7 applications, Y7 reasoning with number.	Y7 lines and angles.	Y7 place value and proportion
	Cross-curricular and careers links	Science – Wave properties links to unit conversions.	Science – Working Scientifically links to graph skills and handling data. PE – Probability in Rounders		Science – Cells/Microscopes links to standard form		Science – Working Scientifically links to averages, range and data handling.

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	Links to future study	Y9 algebra, Y10 similarity, Y10 proportional change.	Y8 developing geometry, Y9 algebra, Y9 geometry, Y10 similarity.	Y9 graphs, Y9 algebra, Y10 developing algebra.	Y9 standard form, Y10 proportions and proportional change, Y10 using number.	Y9 geometry, Y10 similarity, Y10 geometry	Y9 graphs, Y9 probability and statistics, Y10 delving into data, Y11 probability and statistics.
	Assessment	Three end of block assessments followed by whole class feedback.	Three end of block assessments followed by whole class feedback.	Three end of block assessments followed by whole class feedback. End of term summative assessment.	Three end of block assessments followed by whole class feedback.	Three end of block assessments followed by whole class feedback.	Two end of block assessments followed by whole class feedback. End of year summative assessment.
	Homework	Sparx online platform.	Sparx online platform.	Sparx online platform.	Sparx online platform.	Sparx online platform.	Sparx online platform.