

YEAR 8 MATHS CURRICULUM PROGRESSION OVERVIEW

Subject Curriculum Intent

The learning at Key Stage 3 is sequenced to allow students to become fluent in the fundamentals of mathematics, to develop reasoning skills and to apply knowledge to solve problems. All units interleave crucial knowledge and skills from prior learning at Key Stage 3 as from the Key Stage 2 National Curriculum topic areas of Number, Ratio and proportion, Algebra, Geometry, Measurement and Statistics. This ensures that students build upon prior learning and have secure retention of knowledge over time.

The curriculum links ratio to multiplicative reasoning and then co-ordinates are extended to look at straight line graphs. The concept of algebraic expressions and their manipulation is explored before considering scatter graphs and averages. Fraction calculations and solving equations and inequalities are then considered. The concept of probability is then extended and linked to visible representations. Previous work with fractions is further developed before sequences are linked to algebraic concepts. Standard form and indices are considered before angles are reviewed and the construction of triangles is explored. Number work is linked to estimation and then area is further development and then linked to surface area and volume. To conclude all four transformations are considered.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	-Ratio and Proportion - Working In the Cartesian Plane -Expanding and Factorising	-Representing Data and Averages -Fraction Operations - Equations and Inequalities	-Tables and Probability -Percentages -Sequences	-Indices and Standard Form -Angles and Constructions	-Number Sense	-Area and Volume -Transformations
Core Knowledge/ Threshold Concept	Understand, reason, and solve problems involving: -Understand and use ratio notation, share into a ratio, direct proportion, link ratio to currencies and scale diagrams -Co-ordinates, straight line graphs, $y = mx + c$, find gradients	Understand, reason, and solve problems involving: -Scatter graphs, data in frequency tables, averages and range from a list of data and a table -Add, subtract, multiply and divide fractions and mixed numbers	Understand, reason, and solve problems involving: -Review simple probability, link probability to sample spaces, two-way tables and Venn diagrams - Convert between fractions, decimals and percentages, calculate percentage change,	Understand, reason, and solve problems involving: -Explore and use simple laws of indices, convert between ordinary and standard form numbers, calculate with numbers in standard form -Reviews angles in triangles and	Understand, reason, and solve problems involving: -Time and calendar problems, square and cube numbers and roots, round using decimal places and significant figures, estimating answers	Understand, reason, and solve problems involving: -Review 2D shapes, area of simple shapes and trapezia, circumference and area of circles, area of compound shapes, volume and surface area of prisms, convert metric units

	-Form and simplify algebraic expressions, expand and simplify expressions	-Form and solve equations and inequalities, understand key algebraic definitions	write a quantity as a fraction or percentages of another, financial problems -Generate a sequence from an algebraic rule, find the nth term, explore non-linear sequences	quadrilaterals, work with angles in parallel lines, construct triangles		-Line and rotational symmetry, rotations, translations and enlargements
Why this learning now?	The units link to: - Ratio and Proportion: Year 8 – Ratio and proportion, Fraction operations, Percentages, Indices and standard form, Number sense Year 9 – Number, Using percentages, Ratio and proportion, Rates Year 10 – Non calculator methods, Indices and roots, Percentages and interest, Ratio and fractions Year 11 – Multiplicative, Types of number and sequences, Gradients and Lines, Using graphs	The units link to: -Representing Data and Averages: Year 10 – Collecting, representing and interpreting data Year 11 - Collecting, representing and interpreting data 2 -Fraction Operations: Year 8 – Percentages, Indices and standard form, Number sense Year 9 – Number, Using percentages, Ratio and proportion, Rates Year 10 – Non calculator methods, Indices and roots, Percentages and interest, Ratio and fractions	The unit links to: Tables and Probability: Year 9 – Probability Year 10 – Probability Percentages: Year 8 – Indices and standard form, Number sense Year 9 – Number, Using percentages, Ratio and proportion, Rates Year 10 – Non calculator methods, Indices and roots, Percentages and interest, Ratio and fractions Year 11 – Multiplicative, Types of number and sequences, Using graphs	The unit links to: Indices and Standard Form: Year 8 – Number sense Year 9 – Number, Using percentages, Ratio and proportion, Rates Year 10 – Non calculator methods, Indices and roots, Percentages and interest, Ratio and fractions Year 11 – Multiplicative, Types of number and sequences, Using graphs Angles and Constructions: Year 9 – Constructions, Angles, Trigonometry	The unit links to: Number Sense: Year 9 – Number, Using percentages, Ratio and proportion, Rates Year 10 – Non calculator methods, Indices and roots, Percentages and interest, Ratio and fractions Year 11 – Multiplicative, Types of number and sequences, Using graphs	The unit links to: Area and Volume: Year 9 – 2D and 3D shapes, Pythagoras' theorem Year 10 – Working with circles, Congruence and similarity Transformations: Year 9 – Transformations, similarity and congruence Year 10 – Transformations Year 11 - Vectors

	<p>-Working in the Cartesian Plane: Year 8 – Expanding and factorising, Equations and inequalities, Sequences Year 9 – Equations, Straight line graphs, Expanding and factorising, Graphs of functions Year 10 – Representing solutions of equations and inequalities, Expanding and factorising, Changing the subject Year 11 – Types of number and sequences, Gradients ad Lines, Manipulating expressions, Simultaneous equations, Non-linear graphs, Functions</p> <p>-Expanding and Factorising: Year 8 – Equations and inequalities, Sequences Year 9 – Equations, Straight line graphs, Expanding and factorising, Graphs pf functions</p>	<p>Year 11 – Multiplicative, Types of number and sequences, Using graphs</p> <p>Equations and Inequalities: Year 8 – Sequences Year 9 – Equations, Straight line graphs, Expanding and factorising, Graphs of functions Year 10 – Representing solutions of equations and inequalities, Expanding and factorising, Changing the subject Year 11 – Types of number and sequences, Manipulating expressions, Simultaneous equations, Non-linear graphs, Functions</p>	<p>Sequences: Year 9 – Equations, Straight line graphs, Expanding and factorising, Graphs pf functions Year 10 – Representing solutions of equations and inequalities, Expanding and factorising, Changing the subject Year 11 – Types of number and sequences, Gradients ad Lines, Manipulating expressions, Simultaneous equations, Non-linear graphs, Functions</p>	<p>Year 10 – Angles and Bearings, Trigonometry Year 11 – Loci, Trigonometry 2</p>		
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<p>Assessment Opportunities:</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic WINs for: -Ratio and Proportion - Working In The Cartesian Plane -Expanding and Factorising</p> <p>These are completed in every unit and marked with personalised feedback.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic WINs for: -Representing Data and Averages -Fraction Operations -Equations and Inequalities</p> <p>These are completed in every unit and marked with personalised feedback.</p> <p>Two 45-minute assessments (one non</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic WINs for: -Tables and Probability -Percentages -Sequences</p> <p>These are completed in every unit and marked with personalised feedback.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic WINs for: -Indices and Standard Form -Angles and Constructions</p> <p>These are completed in every unit and marked with personalised feedback.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic WINs for: -Number Sense</p> <p>These are completed in every unit and marked with personalised feedback.</p> <p>Two 45-minute assessments (one non calculator and one calculator) on all topics covered so far.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic WINs for: -Area and Volume -Transformations</p> <p>These are completed in every unit and marked with personalised feedback.</p>

		calculator and one calculator) on all topics covered so far.				
Learning at Home	Homework is set every week, consisting of a one hour, Sparx online homework. This will include consolidation of current work and recall of previous knowledge.	Homework is set every week, consisting of a one hour, Sparx online homework. This will include consolidation of current work and recall of previous knowledge. Pupils are also set revision to complete online before assessments.	Homework is set every week, consisting of a one hour, Sparx online homework. This will include consolidation of current work and recall of previous knowledge.	Homework is set every week, consisting of a one hour, Sparx online homework. This will include consolidation of current work and recall of previous knowledge.	Homework is set every week, consisting of a one hour, Sparx online homework. This will include consolidation of current work and recall of previous knowledge. Pupils are also set revision to complete online before assessments.	Homework is set every week, consisting of a one hour, Sparx online homework. This will include consolidation of current work and recall of previous knowledge.
Key Vocabulary	Proportion Gradient Factorise	Correlation Modal	Multiplier	Indices Parallel	Estimate	Translate
Spiritual, Moral, Social and Cultural concepts covered	<p>To study maths is to train oneself in the art of reason, assembling the facts before making logical deductions – maths removes any prejudice. By its very nature, maths knows no borders, knows no race, religion or gender and knows no social background</p> <p>Spiritual development examples include:</p> <ul style="list-style-type: none"> -Sense of enjoyment and fascination in learning -Use of imagination and creativity in their learning -Willingness to reflect on their experiences -The awe and wonder of mathematics such as symmetry in nature and number sequences such as the Fibonacci sequence <p>Moral development examples include:</p> <ul style="list-style-type: none"> -The use of statistics and how people manipulate them to promote their own (biased) opinions and to discuss the use and misuse of data in all issues including those supporting moral argument. -How to word questionnaires so as not to embarrass people <p>Social development examples include:</p>					

	<ul style="list-style-type: none"> -Use of a range of social skills in different contexts such as a willingness to participate and to work collaboratively -How the census is used by governments to plan ahead for health, education and social requirements <p>Cultural development examples include:</p> <ul style="list-style-type: none"> -Appreciating the wealth of mathematics in all cultures throughout history. -How the Mathematical language is a universal language used worldwide
<p>Links to careers and the world of work</p>	<p>Maths is used in daily life and is therefore a vital skill for everyone. Mathematical skills used on a regular basis including:</p> <ul style="list-style-type: none"> -percentages -fractions -time -best value -financial awareness -ratios -interpreting information -measurements -currency conversions <p>Transferable life skills include:</p> <ul style="list-style-type: none"> -resilience -mathematical writing -number sense working systematically -independent thinking to solve problems -logical reasoning <p>Possible career links include:</p> <ul style="list-style-type: none"> -Accountancy -Banking -Self Employed Business -Architecture -Engineering -Graphic Design