

# YEAR 7 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 builds on key ideas from KS2, starting with consolidation of number properties and calculations. Then algebraic notation is introduced and linked to sequences whilst fractions, decimals and percentages work is reviewed and extended. Next numerical skills are linked to area and perimeter as well as looking at geometrical reasoning. Next the focus is calculating with fractions and then 3D shapes as well as charts and averages as considered. Finally, ratio skills are developed and further shape work with transformations and finally the new area of probability is introduced.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	-Number Properties -Algebraic Notation -Number and Calculations	- Sequences -Fractions, Decimals and Percentages	- Area and Perimeter -Developing Geometric Reasoning	-Calculate with Fractions -3D Shapes	-Charts and Averages	-Ratio -Transformations -Probability
Core Knowledge/ Threshold Concept	Understand, reason, and solve problems involving:  - Multiples, factors, primes, HCF, LCM and product of prime factors  -Function machines, algebraic notation, substitution, simplifying expressions, solving equations, expanding a bracket	Understand, reason and solve problems involving:  -Describing and continuing a sequence, the nth term of a sequence, generate a sequence, find missing terms in a sequence  -Converting between fractions, decimals and percentages, simplifying fractions, ordering fractions,	Understand, reason and solve problems involving:  - Properties of 2D shapes, perimeter and area of simple and compound shapes, converting metric units, link algebra to perimeter  -Draw and measure angles, angles on a line, round a point, vertically opposite, in a triangle and in a	Understand, reason and solve problems involving:  - Convert between fractions and mixed numbers, add, subtract, multiply and divide fractions, simple algebraic fractions  -Properties of 3D shapes, nets, volume and surface area of prisms	Understand, reason and solve problems involving:  - Solve problems involving, charts timetables and simple graphs, drawn and interpret pictograms, pie charts and stem and leaf diagrams, calculate averages and range from a list, combined means and averages from a stem and leaf diagram	Understand, reason and solve problems involving:  - Form and simplify ratios, link ratios to fractions, share into a ratio, solve direct proportion problems, ratio involving units, combining ratios  -Line and rotational symmetry, translating and enlarging shapes, identify congruent and similar shapes, missing

	-Addition, subtraction, multiplication and division of integers and decimals, rounding using decimal places and significant figures, order of operations, powers and roots of negative numbers	decimals and percentages, finding a fraction and percentage of an amount, percentage increase and decrease, financial maths, explore percentages over 100% and multipliers	quadrilateral, angles in parallel lines			lengths in similar shapes  -Understand simple probability, probability of a single event, listing outcomes, sample spaces, frequency trees, mutually exclusive events, two way tables
<b>Why this learning now?</b>	<p>The units link to:</p> <p>- Number Properties: Year 7 – Number and calculations, Sequences, Fractions, decimals and percentages, Calculate with fractions, Ratio 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</p>	<p>The units link to:</p> <p>-Sequences: Year 8 – Working in the Cartesian plane, Expanding and factorising, Equations and inequalities, 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 and Lines,</p>	<p>The units link to:</p> <p>- Area and Perimeter: Year 7 – 3D shapes Year 8 – Area and volume Year 9 – 2D and 3D shapes, Pythagoras’ theorem Year 10 – Working with circles, Congruence and similarity</p> <p>-Developing Geometric Reasoning: Year 8 – Angles and constructions Year 9 – Constructions, Angles, Trigonometry Year 10 – Angles and Bearings, Trigonometry Year 11 – Loci, Trigonometry 2</p>	<p>The units link to:</p> <p>- Calculate With Fractions: Year 7 – Year 7 – Ratio 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</p>	<p>The units link to:</p> <p>-Charts and Averages: Year 8 – Representing data and averages Year 10 – Collecting, representing and interpreting data Year 11 - Collecting, representing and interpreting data 2</p>	<p>The units link to:</p> <p>-Ratio: 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, Using graphs</p>

	<p>interest, Ratio and fractions Year 11 – Multiplicative, Types of number and sequences, Using graphs</p> <p>-Algebraic Notation: Year 7 – Sequences Year 8 – Working in the Cartesian plane, 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 and Lines, Manipulating expressions, Simultaneous equations, Non-linear graphs, Functions</p>	<p>Manipulating expressions, Simultaneous equations, Non-linear graphs, Functions</p> <p>-Fractions, Decimals and Percentages: Year 7 – Calculate with fractions, Ratio 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, Using graphs</p>		<p>sequences, Using graphs</p> <p>-3D Shapes: Year 8 – Area and volume Year 9 – 2D and 3D shapes, Pythagoras' theorem Year 10 – Working with circles, Congruence and similarity</p>		<p>-Transformations: Year 8 – Transformations Year 9 – Transformations, similarity and congruence Year 10 – Transformations Year 11 - Vectors</p> <p>-Probability: Year 8 – Tables and probability Year 9 – Probability Year 10 – Probability</p>
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	<p>-Number and calculations:  Year 7 – Sequence, Fractions, decimals and percentages, Calculate with fractions, Ratio  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, Multiplicative  Year 11 – Multiplicative, Types of number and sequences, Using graphs</p>					
<p><b>Assessment Opportunities:</b></p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p>

	<p>Topic WINS for:</p> <ul style="list-style-type: none"> <li>-Number Properties</li> <li>-Algebraic Notation</li> <li>-Number and Calculations</li> </ul> <p>These are completed in every unit and marked with personalised feedback.</p> <p>One 45-minute non calculator assessment on numeracy and number-based skills.</p>	<p>Topic WINS for:</p> <ul style="list-style-type: none"> <li>- Sequences</li> <li>-Fractions, Decimals and Percentages</li> </ul> <p>These are completed in every unit and marked with personalised feedback.</p>	<p>Topic WINS for:</p> <ul style="list-style-type: none"> <li>-Area and Perimeter</li> <li>-Developing Geometric Reasoning</li> </ul> <p>These are completed in every unit and marked with personalised feedback.</p> <p>One 45-minute non calculator assessment on all topics covered so far.</p>	<p>Topic WINS for:</p> <ul style="list-style-type: none"> <li>-Calculate with Fractions</li> <li>-3D Shapes</li> </ul> <p>These are completed in every unit and marked with personalised feedback.</p>	<p>Topic WINS for:</p> <ul style="list-style-type: none"> <li>- Charts and Averages</li> </ul> <p>These are completed in every unit and marked with personalised feedback.</p>	<p>Topic WINS for:</p> <ul style="list-style-type: none"> <li>-Ratio</li> <li>-Transformations</li> <li>-Probability</li> </ul> <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>
<b>Learning at Home</b>	<p>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.</p> <p>Pupils are also set revision to complete online before assessments.</p>	<p>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.</p>	<p>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.</p> <p>Pupils are also set revision to complete online before assessments.</p>	<p>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.</p>	<p>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.</p> <p>Pupils are also set revision to complete online before assessments.</p>	<p>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.</p>
<b>Key Vocabulary</b>	<p>Prime</p> <p>Inverse</p> <p>Integer</p>	<p>Percentage</p>		<p>Numerator</p> <p>Denominator</p>	<p>Mean</p>	<p>Ratio</p> <p>Symmetry</p>

<p><b>Spiritual, Moral, Social and Cultural concepts covered</b></p>	<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><b>Spiritual development examples include:</b></p> <ul style="list-style-type: none"> <li>-Sense of enjoyment and fascination in learning</li> <li>-Use of imagination and creativity in their learning</li> <li>-Willingness to reflect on their experiences</li> <li>-The awe and wonder of mathematics such as symmetry in nature and number sequences such as the Fibonacci sequence</li> </ul> <p><b>Moral development examples include:</b></p> <ul style="list-style-type: none"> <li>-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.</li> <li>-How to word questionnaires so as not to embarrass people</li> </ul> <p><b>Social development examples include:</b></p> <ul style="list-style-type: none"> <li>-Use of a range of social skills in different contexts such as a willingness to participate and to work collaboratively</li> <li>-How the census is used by governments to plan ahead for health, education and social requirements</li> </ul> <p><b>Cultural development examples include:</b></p> <ul style="list-style-type: none"> <li>-Appreciating the wealth of mathematics in all cultures throughout history.</li> <li>-How the Mathematical language is a universal language used worldwide</li> </ul>
<p><b>Links to careers and the world of work</b></p>	<p>Maths is used in daily life and is therefore a vital skill for everyone. Mathematical skills used on a regular basis include:</p> <ul style="list-style-type: none"> <li>-percentages</li> <li>-fractions</li> <li>-time</li> <li>-best value</li> <li>-financial awareness</li> <li>-ratios</li> <li>-interpreting information</li> <li>-measurements</li> <li>-currency conversions</li> </ul> <p>Transferable life skills include:</p> <ul style="list-style-type: none"> <li>-resilience</li> <li>-mathematical writing</li> </ul>

- number sense working systematically
- independent thinking to solve problems
- logical reasoning

Possible career links include:

- Accountancy
- Banking
- Self Employed Business-
- Architecture
- Engineering
- Graphic Design