

# 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 the introduction of algebra and sequences. Then number work is extended with approximation including interleaving averages and representation of data. Calculation methods follow, including problems with areas and averages, then extending skills with integers and fractions. Next the focus is angles and lines, specifically properties of polygons, mathematical notation and angles in parallel lines, including interleaving other areas of the curriculum such as pie charts. Mathematical reasoning skills are developed through conjecture, using counter examples, and finally set notation in Venn diagrams and the new area of probability are considered.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	-Algebraic Notation -Sequences -Equality and Equivalence	- Place Value -Fractions, Decimals and Percentages -Solving Problems with Addition and Subtraction	- Solving Problems with Multiplication and Division -Fractions and Percentages	-Directed Number -Calculate with Fractions	-Construction -Developing Geometric Reasoning	-Developing Number Sense -Sets and Probability -Prime numbers and Proof
Core Knowledge/ Threshold Concept	Understand, reason, and solve problems involving:  - Algebraic notation, function machines, substituting into expressions - Describe and continue a sequence, sequences with diagrams, sequences with numbers	Understand, reason and solve problems involving:  -Place value, ordering integers and decimals, multiplying and dividing with powers of 10 -Ordering fractions, decimals and percentages, converting between	Understand, reason and solve problems involving:  - Formal methods for multiplication and division of integers and decimals, order of operations, problem solving with multiplication and division - Fractions of an amount and finding a	Understand, reason and solve problems involving:  - Calculating with directed numbers, expressions with directed number, solving two-step equations - Adding and subtracting simple fractions, equivalent fractions, adding and subtracting fractions	Understand, reason and solve problems involving:  - Correctly labelling diagrams, drawing and measuring lines and angles, recognise types of lines and polygons, constructions - Know and use angle facts linked to lines and simple polygons, solve angle problems	Understand, reason and solve problems involving:  - Know and use mental strategies, use estimation for checking, use known facts to derive other facts - Understand and calculate simple probabilities, understand and use Venn diagrams

	-Solving one step equations, simplifying algebraic expression	fractions, decimals and percentages -Formal methods for addition and subtraction of integers and decimals, problem solving with addition and subtraction	percentage of a quantity	with different denominators		- Identify different types of numbers including factors, multiples, prime numbers and proof, make and use conjectures
Why this learning now?	<p>The units link to:</p> <p>-Algebraic Notation: Year 7 – Equality and Equivalence Year 8 – Brackets, Equations and Inequalities Year 8 – Indices Year 9 – Equations Year 9 – Algebraic Representations Year 10 – Indices and Roots Year 10 – Representing Solutions of Equations and Inequalities Year 10 – Expanding and Factorising Year 10 – Changing the Subject Year 11 – Manipulating Expressions</p> <p>-Sequences: Year 8 – Sequences</p>	<p>The units link to:</p> <p>-Place Value: Year 7 – Solving Problems with Addition and Subtraction Year 7 – Solving Problems with Multiplication and Division Year 7 – Directed Number Year 7 – Developing Number Sense Year 8 – Standard Index Form Year 8 – Number Sense Year 9 – Testing Conjectures Year 9 – Number Year 9 – Maths and Money Year 10 – Non-Calculator Methods</p>	<p>The units link to:</p> <p>- Solving problems with Multiplication and division: Year 7 – Directed Number Year 7 – Developing Number Sense Year 7 – Prime Numbers and Proof Year 8 – Standard Index Form Year 8 – Number Sense Year 9 – Testing Conjectures Year 9 – Maths and Money Year 10 – Non-Calculator Methods Year 11 – Types of Number and Sequences Year 11 - Functions</p>	<p>The units link to:</p> <p>- Directed number: Year 7 – Developing Number Sense Year 7 – Prime Numbers and Proof Year 8 – Standard Index Form Year 8 – Number Sense Year 9 – Testing Conjectures Year 9 – Maths and Money Year 10 – Non-Calculator Methods Year 11 – Types of Number and Sequences Year 11 – Functions</p> <p>-Calculate with fractions: Year 8 – Multiplying and Dividing Fractions</p>	<p>The units link to:</p> <p>-Construction: Year 7 – Developing Geometric Reasoning Year 8 – Angles Year 9 – Constructions and Congruence Year 9 – Deduction with Angles Year 10 – Working with Circles Year 10 – Angles and Bearings Year 11 - Loci</p> <p>-Developing Geometric reasoning: Year 8 – Angles Year 9 – Deduction with Angles Year 10 – Working with Circles Year 10 – Angles and Bearings</p>	<p>The units link to:</p> <p>-Developing Number Sense: Year 7 – Prime Numbers and Proof Year 8 – Standard Index Form Year 8 – Number Sense Year 9 – Testing Conjectures Year 9 – Number Year 9 – Maths and Money Year 10 – Non-Calculator Methods Year 11 – Types of Number and Sequences Year 11 – Functions</p> <p>-Sets and Probability: Year 8 – Tables and Probability Year 9 – Probability Year 10 – Probability</p>

	<p>Year 11 – Types of Number and Sequences</p> <p>-Equality and Equivalence: Year 8 – Brackets, Equations and Inequalities Year 8 – Indices Year 9 – Equations Year 9 – Algebraic Representations Year 10 – Indices and Roots Year 10 – Representing Solutions of Equations and Inequalities Year 10 – Expanding and Factorising Year 10 – Changing the Subject Year 11 – Manipulating Expressions</p>	<p>Year 11 – Types of Number and Sequences Year 11 - Functions</p> <p>-Fractions, decimals and Percentages: Year 7 Fractions and Percentages Year 7 - Calculate With Fractions Year 8 – Multiplying and Dividing Fractions Year 8 – Fractions and Percentages Year 9 – Using Percentages Year 10 – Percentages and Interest</p> <p>-Solving Problems with Addition and Subtraction: Year 7 – Solving Problems with Multiplication and Division Year 7 – Directed Number Year 7 – Developing Number Sense Year 7 – Prime Numbers and Proof Year 8 – Standard Index Form</p>	<p>-Fractions and percentages: Year 7 - Calculate With Fractions Year 8 – Multiplying and Dividing Fractions Year 8 – Fractions and Percentages Year 9 – Using Percentages Year 10 – Percentages and Interest</p>	<p>Year 8 – Fractions and Percentages Year 9 – Using Percentages Year 10 – Percentages and Interest</p>		<p>-Prime numbers and proof: Year 8 – Standard Index Form Year 8 – Number Sense Year 9 – Testing Conjectures Year 9 – Number Year 9 – Maths and Money Year 10 – Non-Calculator Methods Year 11 – Types of Number and Sequences Year 11 - Functions</p>
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		Year 8 – Number Sense Year 9 – Testing Conjectures Year 9 – Number Year 9 – Maths and Money Year 10 – Non- Calculator Methods Year 11 – Types of Number and Sequences Year 11 - Functions				
Assessment Opportunities:	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.  Topic reviews for: -Algebraic Notation -Sequences  Non calculator assessment in numeracy skills, algebraic notation and sequences.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.  Topic reviews for: - Equality and Equivalence -Fractions, Decimals and Percentages -Solving Problems with Addition and Subtraction .	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews for: -Solving Problems with Multiplication and Division -Fractions and percentages - Directed number  Calculator assessment on all the topics from the Autumn term.	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews for: -Directed number -Calculate with fractions	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews for: - Construction -Developing Geometric reasoning  Two assessments (one non calculator and one calculator) on all topics from the Autumn and Spring terms, plus Constructions and Developing Geometric Reasoning	Regular formative assessment in lessons including questioning, recall activities and self / peer assessment. Topic reviews for: -Developing Number Sense -Sets and probability -Prime numbers and proof
Learning at Home	Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.	Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.	Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.	Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.	Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.	Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.

	Pupils are also set revision to complete before assessments.		Pupils are also set revision to complete before assessments.		Pupils are also set revision to complete before assessments.	
Key Vocabulary	Inverse	Integer Percentage Commutative	Numerator Denominator	Negative Product	Parallel	Estimate Element Prime
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><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>					
Links to careers and the world of work	<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> </ul>					

- best value
- financial awareness
- ratios
- interpreting information
- measurements
- currency conversions

Transferable life skills include:

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

Possible career links include:

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