

# YEAR 9 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.

Linear equations are linked to graphs, sequences and solving inequalities. The fundamentals of conjecture are introduced, and area is linked to 3D shapes including volume and nets. Number work in context is considered, including standard form. Financial maths is introduced, and angle facts are developed using chains of reasoning. Properties of 2D shapes are extended to include rotation and translation. Reasoning around lengths in right angled triangles is taught and enlargement is linked to coordinates, ratio and multipliers. Graphical representation is linked to direct proportion, including currency and travel graphs. Probability is developed in experimental contexts and plotting of graphs is extending to non-linear cases. Inequalities are linked to number lines and graphs.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	-Equations -Testing Conjectures -Straight Line Graphs	- 3D Shape - Number -Constructions and Congruence	-Using Percentages -Deduction with Angles -Maths and Money -Rotations and Translations	-Pythagoras' Theorem -Ratio and Proportion	-Enlargements and Similarity -Rates	-Probability -Algebraic Representation -GCSE Preparation
Core Knowledge/ Threshold Concept	Understand, reason, and solve problems involving:  -Solving equations, solving inequalities, substitution into formulae and equations, rearranging formulae  -Testing conjectures, expanding binomials	Understand, reason, and solve problems involving:  -Area of 2D shapes, nets, plans and elevations, surface area, volume  -Problems with integers decimals and fractions  -Constructions, loci, congruent shapes	Understand, reason, and solve problems involving:  -Percentage problems  -Angles in parallel lines, problems involving angles  -Bills and bank statements, interest, wages, currency, unit pricing	Understand, reason, and solve problems involving:  -Right angles triangles, using Pythagoras. Theorem  -Review ratio, best value, proportion	Understand, reason, and solve problems involving:  -Enlarging shapes, similar shapes  -Speed, distance-time graphs, density, rates of change	Understand, reason, and solve problems involving:  -Relative frequency, expected outcomes, independent events, probability from Venn diagrams  -Quadratic graphs, interpret graphs, represent inequalities  -Review of years 7-9

	-Plotting straight line graphs, gradients and intercepts, $y=mx+c$		-Rotational symmetry, rotations, translations			
Why this learning now?	<p>The units link to:</p> <p>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>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>Straight Line Graphs: Year 11 – Gradients and Lines</p>	<p>The units link to:</p> <p>3D Shape: Year 10 – Working With Circles</p> <p>Number: Year 9 – Maths and Money Year 10 – Non-Calculator Methods Year 11 – Types of Number and Sequences Year 11 - Functions</p> <p>Constructions and Congruence: Year 9 – Deduction with Angles Year 10 – Working with Circles Year 10 – Angles and Bearings Year 11 - Loci</p>	<p>The units link to:</p> <p>Using Percentages: Year 10 – Percentages and Interest</p> <p>Deduction with Angles: Year 10 – Working with Circles Year 10 – Angles and Bearings Year 11 - Loci</p> <p>Maths and Money: Year 10 – Non-Calculator Methods Year 11 – Types of Number and Sequences Year 11 - Functions</p> <p>Rotations and Translations: Year 9 Enlargement and Similarity Year 10 – Transformations Year 10 – Congruence and Similarity Year 11 - Vectors</p>	<p>The units link to:</p> <p>Pythagoras’ Theorem: Year 10 – Trigonometry 1 Year 11 – Trigonometry 2</p> <p>Ratio and Proportion: Year 9 – Rates Year 10 – Ratio and Fractions Year 10 – Multiplicative Year 11 – Using Graphs</p>	<p>The units link to:</p> <p>Enlargements and Similarity: Year 10 – Transformations Year 10 – Congruence and Similarity Year 11 - Vectors</p> <p>Rates: Year 10 – Ratio and Fractions Year 10 – Multiplicative Year 11 – Using Graphs</p>	<p>The units link to:</p> <p>Probability: Year 10 – Probability</p> <p>Algebraic Representation: 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>GCSE Preparation: Links to all prior learning</p>

	Year 11 – Non-linear Graphs					
Assessment Opportunities:	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic reviews for: -Equations -Testing Conjectures -Straight Line Graphs</p> <p>Non-calculator assessment on equations, testing conjectures and straight line graphs</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic reviews for: -3D Shape - Number -Constructions and Congruence</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic reviews for: - Using Percentages -Deduction with Angles -Maths and Money -Rotations and Translations</p> <p>Calculator assessment on all the units from the Autumn term</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic reviews for: - Pythagoras' Theorem -Ratio and Proportion</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic reviews for: - Enlargements and Similarity -Rates</p> <p>Two assessments (one non-calculator and one calculator) on all the units from the Autumn term and the Spring term</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic reviews for: - Probability -Algebraic Representation</p>
Learning at Home	<p>Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.</p> <p>Pupils are also set revision to complete before assessments.</p>	<p>Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.</p>	<p>Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.</p> <p>Pupils are also set revision to complete before assessments.</p>	<p>Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.</p>	<p>Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.</p> <p>Pupils are also set revision to complete before assessments.</p>	<p>Homework is set each week consisting of MathsWatch tasks on prior learning and topic review questions.</p>
Key Vocabulary	Formula Y-intercept	Rational Perpendicular	Interest Translate	Hypotenuse Direct proportion	Scale factor Density	

<p>Spiritual, Moral, Social and Cultural concepts covered</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>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"> <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>

- 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