

# YEAR 10 MATHS CURRICULUM PROGRESSION OVERVIEW

## Subject Curriculum Intent

The learning at key stage 4 is sequenced to allow students to develop fluency, to apply techniques to solve problems, to apply knowledge to solve problems and to interpret and communicate mathematical information in context. All units interleave crucial knowledge and skills from prior learning. This ensures that students build upon prior learning and have secure retention of knowledge over time, ensuring they know more, remember more, and can do more.

Non-calculator methods including accuracy and rounding are considered and then moving onto looking at more complex indices. Work on circles is extended to look at cylinders and surface area and volume of more complex 3D shapes. Solving equations and inequalities is revisited including visual representations for inequalities and finding solutions graphically. Further graphical techniques are used to display data. Expanding and factorising simple and quadratic expressions are considered moving on to solving of quadratic equations using different methods. Angles and their applications including parallel lines, bearings and circle theorems are considered. Transformations are revised and extended. Percentages are applied to real life contexts and similarity is considered too. Ratios are extended to problem situations and probability questions are solved using visual representations before manipulation of algebraic expressions is extended. Pythagoras' Theorem is extended to include trigonometry and proportion and compound measures are considered.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
<b>Topic</b>	-Non-Calculator Methods -Indices and Roots -Working with Circles	-Representing Solutions of Equations and Inequalities -Collecting, Representing and Interpreting Data -Expanding and Factorising	-Angles and Bearings -Transformations -Percentages and Interest (start)	-Percentages and Interest (finish) -Congruency and Similarity -Ratio and Fractions	-Probability	- Changing the Subject - Trigonometry 1
<b>Core Knowledge/ Threshold Concept</b>	Understand, reason, and solve problems involving:  -Mental and written methods, exact answers, surds, rounding using dp and sf, estimating,	Understand, reason, and solve problems involving:  -Forming and solving equations and inequalities, representing inequalities, solving equations using	Understand, reason, and solve problems involving:  -Angles in shapes, angles in parallel lines, scale diagrams, bearings, circle theorems	Understand, reason, and solve problems involving:  -Percentages of an amount, percentage increase/decrease, interest, reverse percentages, percentage change	Understand, reason, and solve problems involving:  -Experimental probability, probability form diagrams, sample spaces, simple and more complex tree diagrams	Understand, reason, and solve problems involving:  -Solving equations and inequalities, changing the subject, iteration  -Using trigonometry to find sides and angles in

	<p>accuracy, financial maths problems</p> <p>-Powers and roots, index rules, standard form</p> <p>-Arcs and sectors, volume and surface area of prisms, cylinders, cones and spheres</p>	<p>graphs, graphical inequalities</p> <p>-Types of data, frequency table, frequency polygons, calculating averages, time series graphs, histograms, stem and leaf diagrams</p> <p>-Expanding brackets, factoring expressions, solving equations involving factorising, solving quadratic equations</p>	<p>-Perform and describe reflections, rotations, translations and enlargements</p> <p>-Percentages of an amount, percentage increase/decrease, interest, reverse percentages, percentage change</p>	<p>-Similar shapes, more complex similarity, congruence</p> <p>-Links between ratios and fractions, comparison, currency, using ratios, best buys, ratio problems, ratio with area and volume</p>		<p>right angles triangles, problems involving right angled triangles</p>
<b>Why this learning now?</b>	<p>The units link to:</p> <p>Non-Calculator Methods: Year 10 – Indices and roots, Percentages and interest, Ratio and fractions Year 11 – Multiplicative, Types of number and sequences, Using graphs</p> <p>Indices and Roots: Year 10 – Percentages and interest, Ratio and fractions</p>	<p>The units link to:</p> <p>Representing Solutions of Equations and Inequalities: Year 10 – Expanding and factorising, Changing the subject Year 11 – Types of number and sequences, Gradients and Lines, Manipulating expressions, Simultaneous equations, Non-linear graphs, Functions, Using graphs</p>	<p>The units link to:</p> <p>Angles and Bearings: Year 10 – Trigonometry Year 11 – Loci, Trigonometry 2 Year 11 – Vectors</p> <p>Transformations: Year 11 – Vectors</p> <p>Percentages and Interest: Year 10 – Ratio and fractions Year 11 – Multiplicative, Types of</p>	<p>The units link to:</p> <p>Percentages and Interest: Year 10 – Ratio and fractions Year 11 – Multiplicative, Types of number and sequences, Using graphs</p> <p>Congruency and Similarity: Year 11 - Vectors</p> <p>Ratio and Fractions:</p>	<p>The units link to:</p> <p>Probability: Exam preparation</p>	<p>The units link to:</p> <p>Changing the Subject: Year 11 – Types of number and sequences, Manipulating expressions, Simultaneous equations, Non-linear graphs, Functions</p> <p>Trigonometry 1: Year 11 – Loci, Trigonometry 2</p>

	<p>Year 11 – Multiplicative, Types of number and sequences, Using graphs</p> <p>Working with Circles: Year 10 – Congruence and similarity</p>	<p>Collecting, Representing and Interpreting Data: Year 11 – Collecting, representing and interpreting data 2</p> <p>Expanding and Factorising: Year 10 – Changing the subject Year 11 – Types of number and sequences, Manipulating expressions, Simultaneous equations, Non-linear graphs, Functions</p>	<p>number and sequences, Using graphs</p>	<p>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>Topic WINS for: -Non-Calculator Methods -Indices and Roots -Working with Circles</p> <p>These are completed in every unit and marked</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic WINS for: -Representing Solutions of Equations and Inequalities -Collecting, Representing and Interpreting Data</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic WINS for: -Angles and Bearings -Transformations</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: -Percentages and Interest -Congruency and Similarity -Ratio and Fractions</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic WINS for: -Probability</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: -Changing the Subject -Trigonometry 1</p> <p>These are completed in every unit and marked with</p>

	with personalised feedback.	-Expanding and Factorising  These are completed in every unit and marked with personalised feedback.	Three 45-minute assessments (one non calculator and one calculator) on all topics covered so far.	These are completed in every unit and marked with personalised feedback.	Two 90-minute assessments (one non calculator and one calculator) on all topics covered so far.	personalised feedback.
<b>Learning at Home</b>	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.	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.
<b>Key Vocabulary</b>	Circumference Tangent  GCSE Exam Command Words	Inequality  GCSE Exam Command Words	Bearing  GCSE Exam Command Words	Congruent Similar  GCSE Exam Command Words	Independent  GCSE Exam Command Words	GCSE Exam Command Words
<b>Spiritual, Moral, Social and Cultural concepts covered</b>	<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> </ul>					

	<p>-The awe and wonder of mathematics such as symmetry in nature and number sequences such as the Fibonacci sequence</p> <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 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> <ul style="list-style-type: none"> <li>-resilience</li> <li>-mathematical writing</li> <li>-number sense working systematically</li> <li>-independent thinking to solve problems</li> <li>-logical reasoning</li> </ul> <p>Possible career links include:</p>

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