

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 cylinders and other 3D shapes as well extending forming. Solving equations is also revisited including those involving quadratics and expanding and factorising simple and quadric expressions are considered including more complex methods. Further graphical techniques are used to display data. Angles and their applications including parallel lines, bearings and circle theorems are considered. Transformations are revised and extended to negative scale factors and similarity is considered too. Ratios are extended to problem situations and percentages are applied to real life contexts. Probability questions are solved using visual representation and 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
Topic	-Non-Calculator Methods -Indices and Roots -Working with Circles	-Representing Solutions of Equations and Inequalities -Collecting, Representing and Interpreting Data 1 -Expanding and Factorising	-Angles and Bearings -Transformations -Percentages and Interest	-Congruency and Similarity -Ratio and Fractions	-Probability -Changing the Subject	-Trigonometry 1 -Multiplicative
Core Knowledge/ Threshold Concept	Understand, reason, and solve problems involving: -Mental and written methods, exact answers, surds, rounding using dp and sf, estimating, accuracy, financial maths problems	Understand, reason, and solve problems involving: -Forming and solving equations and inequalities, representing inequalities, solving equations using graphs, graphical inequalities	Understand, reason, and solve problems involving: -angles in shapes, angles in parallel lines, scale diagrams, bearings, circle theorems	Understand, reason, and solve problems involving: -similar shapes, more complex similarity, congruence -Links between ratios and fractions, comparison, currency, using ratios, bets	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: -Using trigonometry to find sides and angles in right angles triangles, problems involving right angled triangles

	<p>-Powers and roots, indices rules, standard form</p> <p>-Arcs and sectors, volume and surface area of cylinders, cones and spheres</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, enlargements</p> <p>-Percentages of an amount, percentage increase/decrease, interest, reverse percentages, percentage change</p>	<p>buys, ratio problems, ratio with area and volume</p>	<p>-Solving equations and inequalities, changing the subject, iteration</p>	
Why this learning now?	<p>The units link to:</p> <p>Non-Calculator Methods: Year 11 – Types of Number and Sequences Year 11 - Functions</p> <p>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>The units link to:</p> <p>Representing Solutions of Equations and Inequalities: Year 10 – Expanding and Factorising Year 10 – Changing the Subject Year 11 – Manipulating Expressions</p> <p>Collecting, Representing and Interpreting Data 1: Year 11 – Collecting, Representing and Interpreting Data 2</p>	<p>The units link to:</p> <p>Angles and Bearings: Year 11 – Loci</p> <p>Transformations: Year 10 – Congruence and Similarity Year 11 - Vectors</p> <p>Percentages and Interest: Exam preparation</p>	<p>The units link to:</p> <p>Congruency and Similarity: Year 11 - Vectors</p> <p>Ratio and Fractions: Year 10 – Multiplicative Year 11 – Using Graphs</p>	<p>The units link to:</p> <p>Probability: Exam preparation</p> <p>Changing the Subject: Year 11 – Manipulating Expressions</p>	<p>The units link to:</p> <p>Trigonometry 2: Year 11 – Trigonometry 2</p> <p>Multiplicative: Year 11 – Using Graphs</p>

	Working with Circles: Year 10 – Angles and Bearings Year 11 - Loci	Expanding and Factorising: Year 10 – Changing the Subject Year 11 – Manipulating Expressions				
Assessment Opportunities:	<p>Regular formative assessment in lessons including questioning, recall activities and self /peer assessment.</p> <p>Topic reviews for: -Non-Calculator Methods -Indices and Roots -Working with Circles</p> <p>These are completed after 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 reviews for: -Representing Solutions of Equations and Inequalities -Collecting, Representing and Interpreting Data 1 -Expanding and Factorising</p> <p>These are completed after every unit and marked with personalised feedback.</p> <p>Two assessments (one non-calculator and one calculator) on non-calculator methods, indices and roots and working with circles.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic reviews for: -Angles and Bearings -Transformations -Percentages and Interest</p> <p>These are completed after 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 reviews for: -Congruency and Similarity -Ratio and Fractions</p> <p>These are completed after every unit and marked with personalised feedback.</p> <p>Two assessments (one non-calculator and one calculator) on all the units from the Autumn term plus angles and bearings, transformations and percentages and interest.</p>	<p>Regular formative assessment in lessons including questioning, recall activities and self / peer assessment.</p> <p>Topic reviews for: -Probability -Changing the Subject</p> <p>These are completed after 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 reviews for: -Trigonometry 1 -Multiplicative</p> <p>These are completed after every unit and marked with personalised feedback.</p> <p>Three assessments (one non-calculator and two calculator) on all the units from the Autumn term, Spring term plus probability and changing the subject.</p>

Learning at Home	Homework is set every week on Sparx, consisting of questions recently covered in lessons and revision of previously studied content.	Homework is set every week on Sparx, consisting of questions recently covered in lessons and revision of previously studied content. Pupils are directed to revision on MathsWatch before Key Assessments.	Homework is set every week on Sparx, consisting of questions recently covered in lessons and revision of previously studied content.	Homework is set every week on Sparx, consisting of questions recently covered in lessons and revision of previously studied content. Pupils are directed to revision on MathsWatch before Key Assessments.	Homework is set every week on Sparx, consisting of questions recently covered in lessons and revision of previously studied content.	Homework is set every week on Sparx, consisting of questions recently covered in lessons and revision of previously studied content. Pupils are directed to revision on MathsWatch before Key Assessments.
Key Vocabulary	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
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 					

	<p>-How the census is used by governments to plan ahead for health, education and social requirements</p> <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

YEAR 11 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. Initially proportion and compound measures are considered. Then displaying data is consolidated and extended before considering accurate scale drawings. Number properties and sequences are revisited, including nth term and more complex sequences. Knowledge of linear graphs is extended, including perpendicular lines and algebraic skills are further extended including considering proof. Diagrams involving vectors are considered and then non-linear graphs are investigated. Number and algebra skills are combined to look at functions and transforming graphs. Then to conclude application of graphs are looked at including travel graphs and solving equations graphically.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	-Multiplicative -Collecting, Representing and Interpreting Data 2 -Loci	- Types of Number - Gradients and Lines -Manipulating Expressions	-Vectors	-Non-linear Graphs -Functions -Using Graphs	-Exam preparation	-Exam preparation
Core Knowledge/ Threshold Concept	Understand, reason, and solve problems involving: -Direct and inverse proportion, calculations with speed, density and pressure -Construct and interpret different graphs, compare data using graphs, draw and interpret scatter graphs -Plans and elevations,	Understand, reason, and solve problems involving: - Different types of numbers, types of sequences including linear, arithmetic, geometric, and quadratic, general rule for sequences including composite and inverse functions (H)	Understand, reason, and solve problems involving: - including theorems linked to circles (H) -Algebraic reasoning: Algebraic reasoning, including sequences, proof (H) and complex inequalities (H)	Understand, reason, and solve problems involving: -Plot and interpret a range of non-linear graphs-Listing and describing: Listing and describing outcomes including the product rule for counting (H) -Show that...: 'Show that...' problem solving including vectors (H)	-Consolidation of the GCSE Maths course -Examination preparation using past and practice papers	-Consolidation of the GCSE Maths course -Examination preparation using past and practice papers

	standard constructions, loci problems	-Plotting straight line graphs, equations of linear graphs -Simplifying algebraic expressions including those expressed in fractional form, solve simple and more complex equations				
Why this learning now?	The units link to: Multiplicative: Year 11 – Using Graphs Collecting, Representing and Interpreting Data 2: Year 11 – Exam reparation Loci: Exam Preparation	The units link to: Types of Number and Sequences: Year 11 - Functions Gradients and Lines: Year 11 – Non-linear Graphs Manipulating Expressions: Exam Preparation	The units link to: Vectors: Exam Preparation	The units link to: Non-Linear Graphs: Exam Preparation Functions: Exam Preparation Using Graphs: Exam Preparation	-Consolidation of the GCSE Maths course -Examination preparation using past and practice papers	-Consolidation of the GCSE Maths course -Examination preparation using past and practice papers
Assessment Opportunities:	Regular formative assessment in lessons including questioning, recall activities and self /peer assessment. Topic reviews for: -Multiplicative -Collecting, Representing and Interpreting Data 2	Regular formative assessment in lessons including questioning, recall activities and self /peer assessment. Topic reviews for: - Types of Number - Gradients and Lines -Manipulating Expressions	Regular formative assessment in lessons including questioning, recall activities and self /peer assessment. Topic reviews for: - Vectors These are completed after every unit and	Regular formative assessment in lessons including questioning, recall activities and self /peer assessment. Topic reviews for: -Non-linear Graphs -Functions -Using Graphs	GCSE Maths Examinations	GCSE Maths Examinations

	<p>-Loci</p> <p>These are completed after every unit and marked with personalised feedback.</p> <p>Year 11 Mock exams. Three past GCSE papers (one non-calculator and two calculator papers) to reflect the content covered so far.</p>	<p>These are completed after every unit and marked with personalised feedback.</p>	<p>marked with personalised feedback.</p> <p>Year 11 Mock exams. Three past GCSE papers (one non-calculator and two calculator papers) to reflect the content covered so far.</p>	<p>These are completed after every unit and marked with personalised feedback.</p>		
Learning at Home	<p>Homework is set every week, consisting of topic reviews and recall activities.</p> <p>Pupils are also set revision before mock exams.</p>	<p>Homework is set every week, consisting of topic reviews and recall activities.</p>	<p>Homework is set every week, consisting of topic reviews and recall activities.</p> <p>Pupils are also set revision before mock exams.</p>	<p>Homework is set every week, consisting of topic reviews and recall activities.</p>	<p>Revision and past exam papers.</p>	<p>Revision and past exam papers.</p>
Key Vocabulary	<p>GCSE Exam Command Words</p>	<p>GCSE Exam Command Words</p>	<p>Vector GCSE Exam Command Words</p>	<p>GCSE Exam Command Words</p>	<p>GCSE Exam Command Words</p>	<p>GCSE Exam Command Words</p>

<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>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

Possible career links include:

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