



Key Stage 4 Curriculum Map Overview

Subject: Maths						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10	<p>Unit Name: Ratios and Fractions Percentages and Interest rates Probability Unit Description: Ratio & fractions builds on KS3 work on ratio and fractions, highlighting similarities and differences and links to other areas of mathematics including both algebra and geometry. The focus is on reasoning and understanding notation to support the solution of increasingly complex problems that include information presented in a variety of forms. The bar model is a key tool used to support representing and solving these problems. Percentages and Interest rates, Although percentages are not specifically mentioned in the KS4 national curriculum, they feature heavily in GCSE papers and this block builds on the understanding gained in KS3. Calculator methods are encouraged throughout and are essential for repeated percentage change/growth and decay problems. Use of financial contexts is central to this block, helping students to maintain familiarity with the vocabulary they are unlikely to use outside school. Probability block also builds on KS3 and provides a good context in which to revisit fraction arithmetic and conversion between fractions, decimals and percentages. Tables and Venn diagrams are revisited and understanding and use of tree diagrams is developed at both tiers, with conditional probability being a key focus for Higher tier students</p>	<p>Unit Name: Solutions of equations and inequalities Angles and Bearings Vectors Working with Circles Unit Description: Students will have covered both equations and inequalities at key stage 3 and this unit offers the opportunity to revisit and reinforce standard techniques and deepen their understanding. Looking at the difference between equations and inequalities, students will establish the difference between a solution and a solution set; they will also explore how number lines and graphs can be used to represent the solutions to inequalities. As well as solving equations, emphasis needs to be placed on forming equations from given information. This provides an excellent opportunity to revisit other topics in the curriculum such as angles on a straight line/in shapes/parallel lines, probability, area and perimeter etc. Factorising quadratics to solve equations is covered in the Higher strand here and is revisited in the Core strand in Year 11 As well as the formal introduction of bearings, this block provides a great opportunity to revisit other materials and make links across the mathematics curriculum. Accurate drawing and use of scales will be vital, as is the use of parallel line angles rules; all of these have been covered at Key Stage 3. Students will also reinforce their</p>	<p>Unit Name: Collecting and interpreting data Types of number and sequences Unit Description: Collecting and interpreting data, KS3 work on the collection, representation and use of summary statistics to describe data. Much of the content is familiar, both from previous study within and beyond mathematics (including Geography and Science) and from everyday life. The steps have been chosen to balance consolidation of existing knowledge with extending and deepening, particularly in terms of interpretation of results and evaluating and criticising statistical methods and diagrams. For students following Higher tier, there is additional content relating to continuous data including histograms, cumulative frequency diagrams, box plots and associated measures such as quartiles and the interquartile range. Again, the emphasis with these topics should be on interpretation (particularly in making comparisons) and not just construction. A possible approach to teaching this unit would be project-based, where students collect primary data (or select samples from secondary data) from which they make and test hypotheses, thus giving a purpose to the creation and analysis of the diagrams and measures involved. Types of numbers mainly revises KS3 content, reviewing prime factorisation and associated number content such as HCF and</p>	<p>Unit Name: Congruence and similarity Indices and roots Assessment Unit Description: Building on their experience of enlargement and similarity in previous years, this unit extends students' experiences and looks more formally at dealing with topics such as similar triangles. It would be useful to use ICT to demonstrate what changes and what stays the same when manipulating similar shapes. Parallel line angle rules are revisited to support the establishment of similarity. Congruency is introduced through considering what information is needed to produce a unique triangle. Higher level content extends enlargement to explore negative scale factors and looks at establishing that a pair of triangles are congruent through formal proof. This block consolidates the previous two blocks focusing on understanding powers generally, and in particular in standard form. Negative and fractional indices are explored in detail. Again, much of this content will be familiar from KS3, particularly for Higher tier students, so this consolidation material may be covered in less than two weeks allowing more time for general non-calculator and problem-solving practice. To consolidate the index laws, these can be revisited in the next block when simplifying algebraic expressions.</p>	<p>Unit Name: Non calculator work Trigonometry Unit Description: Non calculator work builds on KS3 work on the collection, representation and use of summary statistics to describe data. Much of the content is familiar, both from previous study within and beyond mathematics (including Geography and Science) and from everyday life. The steps have been chosen to balance consolidation of existing knowledge with extending and deepening, particularly in terms of interpretation of results and evaluating and criticising statistical methods and diagrams. For students following Higher tier, there is additional content relating to continuous data including histograms, cumulative frequency diagrams, box plots and associated measures such as quartiles and the interquartile range. Again the emphasis with these topics should be on interpretation (particularly in making comparisons) and not just construction. A possible approach to teaching this unit would be project-based, where students collect primary data (or select samples from secondary data) from which they make and test hypotheses, thus giving a purpose to the creation and analysis of the diagrams and measures involved. Trigonometry is introduced as a special case of similarity within</p>	<p>Unit Name: Maths life skills Testing and assessment Unit Description: Barclays life skills using real life examples for banking, interest rates, mortgages, rent etc Reading timetables, shopping lists and budgets.</p>

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		<p>understanding of trigonometry and Pythagoras from earlier this year, applying their skills in another context as well as using mathematics to model real-life situations.</p> <p>Understand the meaning of a solution Form and solve one-step and two-step equations Form and solve one-step and two-step inequalities Show solutions to inequalities on a number line Interpret representations on number lines as inequalities</p> <p>Students will have met vectors to describe translations during Key Stage 3 This will be revisited and used as the basis for looking more formally at vectors, discovering the meaning of $-a$ compared to a to make sense of operations such as addition, subtraction and multiplication of vectors. This will connect to exploring 'journeys' within shapes linking the notation AB with $b - a$ etc. Higher tier students will then use this understanding as the basis for developing geometric proof, making links to their knowledge of properties of shape and parallel lines.</p> <p>Working with circles also introduces new content whilst making use of and extending prior learning. The formulae for arc length and sector area are built up from students' understanding of fractions. They are also introduced to the formulae for surface area and volume of spheres and cones; here higher students can enhance their knowledge and skills of working with area and volume ratios.</p>	<p>LCM. Sequences is extended for Higher Tier to include surds and finding the formula for a quadratic sequence.</p>	<p>Assessment weeks</p>	<p>right-angled triangles. Emphasis is placed throughout the steps on linking the trig functions to ratios, rather than just functions. This key topic is introduced early in Year 10 to allow regular revisiting e.g. when looking at bearings. For the Higher tier, calculation with trigonometry is covered now and graphical representation is covered in Year 11</p>	
<p>Year 11</p>	<p>Unit Name: Multiplicative reasoning Geometric reasoning Unit Description: Compare lengths, areas and volumes using ratio notation and /or scale factors: making links to similarity.</p>	<p>Unit Name: Algebra recap Expand and Factorise Changing the subject Area and Perimeter Area and Perimeter Unit Description: consolidate their algebraic capability from key stage 3 and extend their understanding of</p>	<p>Unit Name: Using graphs Geometry, volume and Surface area Unit Description: Students to consolidate their knowledge of angle facts and develop increasingly complex chains of reasoning to solve geometric problems. Revise the first four circle theorems studied in year</p>	<p>Unit Name: Money matters Fraction, decimals and percentages conversion Unit Description: Students to practice their skills in various financial matters. The language of financial mathematics. Simple ideas of tax and wages are introduced and the percentages are</p>	<p>Unit Name: Revision for examination work Unit Description: Revision and filling the gaps. Examination weeks.</p>	<p>Unit Name: Examination timetable Unit Description: Click or tap here to enter text.</p>

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	<p>Understand that X is inversely proportional to Y is equivalent to X is proportional to $1/y$. Students to consolidate their knowledge of angle facts and develop increasingly complex chains of reasoning to solve geometric problems.</p>	<p>algebraic simplification and manipulation to include quadratic expressions. Expand and factorise with a single bracket before moving onto quadratics. Students to consolidate from year 9 work – with a review to solving equations and inequalities before moving to rearrangement of both familiar and unfamiliar formulae. Checking substitution is encouraged throughout. Students following the Higher strand will have met the formulae for the area of a trapezium in Year 7; this knowledge is now extended to all students, along with the formula for the area of a circle. A key aspect of the unit is choosing and using the correct formula for the correct shape, reinforcing recognising the shapes, their properties and names and looking explicitly at compound shapes.</p>	<p>10 and learn the remaining theorems. Students also to revisit and to be able to calculate area and perimeter of rectilinear shapes. Students must have the conceptual understanding of the formula for area by linking this to counting squares. Writing and using the formulae for area and perimeter</p>	<p>studied. Simple and compound interest. Percentage calculator methods are encouraged throughout and are essential for repeated percentage change/growth and decay problems. Use of financial contexts is central to this block, helping students to maintain familiarity with the vocabulary they are unlikely to use outside school.</p>		
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