Year 10 Foundation

Using their strong mathematical roots from key stage 3, students will extend their mathematical knowledge and skills by learning how to tackle more demanding contextual GCSE problems that require a firm grasp of, data, geometry, algebra, and particularly number, ratio and proportion

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills Overview	**Percentages** Solve contextual problems involving the full range of percentage skills – both with, or without a calculator. **Formulae and Equations** Confidently form expressions, equations or formulae from a context. Use manipulation skills to simplify expressions, solve equations or rearrange formulae. **Area & Perimeter** Solve a range of contextual problems involving area or perimeter of 2D shapes including circles.	**The Data Handling Cycle** Hypothesise, collect data, calculate statistics, analyse and present data, evaluate findings. Apply this principle to real data. **Graphs & Charts** Construct and interpret a range of different graphs and charts to understand how they display different aspects of data. **Sequences** Solve a range of abstract and contextual problems involving linear patterns or sequences, including quadratic sequences.	**Linear Graphs** Solve problems by applying knowledge of abstract linear graphs to real life contexts involving rates that may be described graphically. **Ratio & Proportion** Consolidate ratio skills from KS3 and begin to move fluently between ratio and fractions. Solve problems where quantities are shared in more complex ways.	**Angles & Reasoning** Begin to use formal notation and geometric reasoning statements to explain the steps taken in angle problems. **Quadratic Expressions** Extend Y9 algebraic manipulation skills to work with quadratic expressions. Learn to Solve a mix of abstract and contextual problems.	**Standard Form** Convert numbers in standard form. $+ - \times \div$ with standard form with or without a calculator. **Percentages** Solve a range of contextual percentage problems, including percentage profit/loss and reverse percentage. **Transformations** Construct and describe reflections, rotations, translations and enlargements on coordinate axes.	**Area & Volume** Calculate the area of 2D shapes including circles. Find the surface area and volume of 3D prisms. Work with compound units like density and pressure **Probability** of more than one event using two-way tables, sample space diagrams, and Venn diagrams.
Opportunities for Recall & Retrieval of Prior Learning	**From Year 9** • Fractions & decimals with percentages • Algebraic manipulation • 2D shapes	**From Year 9** • Number skills in calculating statistics • Percentages in data • Expressions within sequences	**From Year 9** • Manipulating expressions • Use of equations within Linear Graphs • Fractions & decimals	**From Year 9** • Angle properties of 2D shapes • Algebraic manipulation	**From Year 9** • Number skills • Fractions & decimals • Rules of Indices • Properties of 2D shapes	**From Year 9** • 3D Shapes • Fractions & decimals
	From Year 10 • Equations within Area & Perimeter • Percentages within perimeter & area problems	**From Year 10** • Use of equations within sequences	**From Year 10** • Use of percentages within Ratio & Proportion	**From Year 10** • Forming & solving equations from angle problems	**From Year 10** • Use of ratio & percentage skills • Area & perimeter of transformed shapes	**From Year 10** • Area & perimeter • Percentage & fractions with area & volume problems and Probability

Year 10 Higher

Using their strong mathematical roots from key stage 3, students will extend their mathematical knowledge and skills by learning how to tackle more demanding contextual and often abstract GCSE problems that require a firm grasp of, data, geometry, and particularly algebra.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills Overview	**Difficult Decimals** Explore rational and irrational numbers, as well as recurring and terminating decimals. Perform $+ - \times \div$ with surds, as well as rationalising the denominator. **Percentages** Solve contextual problems involving the full range of percentage skills – both with, or without a calculator. **Sequences** Explore a range of linear, quadratic, and geometric sequences. Use iterative processes to generate sequences.	**Linear Graphs** Find and use the equation of a straight line to solve a range of coordinate geometry problems on an axes grid. **Ratio & Proportion** Move fluently between ratio and fractions. Solve a range of ratio and proportion problems where quantities are shared in complex ways. **Angles & Reasoning** Know and use formal geometric notation to articulate reasoning when solving angle problems. Begin to write formal geometric proofs.	**Algebraic Fractions** Perform $+ - \times \div$ with algebraic fractions **Accuracy & Bounds** Find upper and lower bounds of accuracy in $+ - \times \div$ calculations in context. **Discrete Data** Construct and interpret a range of graphs and charts to represent discrete data in different ways.	**Linear Simultaneous Equations** Solve simultaneous equations algebraically, graphically, whether abstract or contextual. **Pythagoras & Trigonometry** Use a combination of Pythagoras and trigonometry to solve a range of geometric problems in 2D.	**Non-Linear Graphs** Explore the graphs of quadratics, cubic, reciprocals and circles **Solving Quadratics** by factorising, using the formula, rearranging, and iteration. **Probability** of more than one event using two-way tables, sample space diagrams, and Venn diagrams – Set Theory	**Area & Volume** Spheres, cones, pyramids including complex compound 3D shapes. **Circle Theorems** Know and use the circle theorems to solve multi-step angle reasoning problems.
Opportunities for Recall & Retrieval of Prior Learning	**From Year 9** • Index laws related to $+ - \times \div$ with surds • Fractions & decimals • Formulae & Equations • Algebra skills for recurring decimals to fractions	**From Year 9** • Manipulating algebraic expressions • Link linear equations to linear graphs • Use of equations to solve angle & ratio problems	**From Year 9** • Calculating with fractions • Manipulating algebraic expressions • Number skills & rounding • Comparing data	**From Year 9** • Expressions & equations • Link trigonometric ratio to proportion • Area & volume	**From Year 9** • Expressions and equations • Calculating with Fractions & decimals • Quadratic equations from shape problems	**From Year 9** • Surface area & volume of prisms • Use of fractions & percentage with area & volume problems
	From Year 10 • Surds within percentage problems • Sequences involving surds	**From Year 10** • Use or percentages & fractions within ratio problems • Use sequences to explore linear graph problems	**From Year 10** • Explore percentage, angle & ratio problems involving involving Bounds • Data – Use Percentages & ratio	**From Year 10** • Use of surds within Trigonometry & Pythagoras • Use percentage & ratio with shape problems	**From Year 10** • Link quadratic sequences to quadratic graphs • Use of surds • Quadratic equations in Pythagoras	**From Year 10** • Use of surds • Angles & reasoning • Bound problems in area & volume • Algebra within area, volume & angle