



Intent: To consolidate and further develop core concepts of number, algebra, geometry, ratio and proportion, statistics and probability developed in KS3. Through interleaving and spaced practice students will increase their fluency and confidence in key mathematical processes. Students will begin to make connections between more advanced mathematical concepts in order to solve a variety of problems.

Mathematics

Year 11F

Knowledge
(facts, information, concepts and key terminology)

Number

Use of the four operations with negative numbers, fractions, decimals and percentages,

Algebra

Factorising into one and two brackets, expanding, collecting like terms, finding the nth term of sequences, substituting into formulae, solving linear and quadratic equations.

Geometry

Areas, perimeters and volumes of shapes, angles, coordinates, transformations.

Ratio & Proportion

Percentages of amounts, percentage change, converting between fractions, decimals and percentages, simplifying and sharing ratios, proportional reasoning, maps and scales, pie charts, capture-recapture.

Statistics & Probability

Theoretical and experimental probability, mutually exclusive and independent events, two-way tables, frequency trees, Venn diagrams, tree diagrams. Statistical diagrams, measures of average, measures of spread.

Understanding
(ability to connect and synthesise knowledge within a context)

The same methods applying the four operations can be applied to most types of numbers when fluent.

The difference between types of equations and how the approaches to solve them differ. Use of graphical representations to approximate solutions.

Calculations for area and perimeter are simply an application of adding and multiplication. The properties of 2D and 3D shapes which make them unique. Confidence with the concept of space relating to 2D and 3D shapes. Angles are a numerical representation of a turn and they take different properties depending on where they are present.

The equivalence between fractions, decimals, percentages and ratios. How bar models and ratio tables can support learning in order to simplify problems when necessary.

Despite probability being a product of randomness, there is a theoretical approach to calculating chance. Learners will understand the different contexts to probabilities and the diagrams associated. The reasons for using different statistical diagrams.

Skills
(successful application of knowledge and understanding to a specific task)

Be flexible with calculations in order to find the most efficient method. Apply knowledge and understanding to contextual and real-life problems.

Apply appropriate procedures to solve all types of equations when presented in standard and unfamiliar contexts.

Use knowledge of shapes and angles to efficiently solve problems. Find links between shapes in order to lighten the cognitive load when remembering key properties. Apply knowledge and understanding in order to real-life problems.

Fluently interchange between fractions, decimals, percentages and ratios in order to answer challenging questions based upon the most efficient method. Apply knowledge to contextual problems.

Apply the appropriate method to answer different types of questions. Evaluate the likelihood of outcomes based upon calculations. Use mathematics to make sensible predictions. Be able to accurately draw statistical diagrams.

Formal Assessments
(those done by all/vast majority of the cohort)

Termly cumulative assessments covering content from start of GCSE course. Topic Assessments after each topic has been delivered.

By the end of the year students on course for at least a grade 5 will... be proficient in using procedures to answer standard questions across all areas of mathematics. Apply concepts to unfamiliar problems using problem solving skills developed over the year.

Learners will use the curriculum time to consolidate core concepts and review more challenging topic areas. Similarly, lesson time will be dedicated to develop exam technique and identify individual needs based upon assessment data.