# Maths Curriculum Overview - Year 10 Foundation

| | Unit | Details |
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| Autumn One | **Number**<br>**Algebra** | The GCSE foundation course will start with some consolidation of number concepts encountered in previous years, while extending the scope of both their knowledge and skills. Pupils will use their understanding of place value to round decimals, and use this in estimation. They will then move on to considering different types of number, such as squares, cubes, multiples, factors and primes, and will develop their understanding to write integers as a product of primes, and find Highest common factors and Lowest common multiples. This then leads on to writing numbers using surd notation on a calculator and index notation for powers of ten. This half term pupils will develop their understanding of algebraic methods and notation. They will learn how to simplify expressions and use their understanding of indices from the previous topic to generalise into algebra. They will multiply, divide, expand and factorise expressions. Their knowledge of notation will develop when looking at the difference between identities, equations and formulae, and they will learn how to substitute into formulae from different contexts. |
| Autumn Two | **Graphs, tables and charts**<br>**Fractions and Percentages** | We will then move on to designing tables and data collection sheets. Pupils will appreciate the data that is represented around us, and will both read data in context and interpret it. They will design and use two-way tables, composite bar charts, histograms, time series graphs and back-to-back stem and leaf diagrams. Scatter graphs will be used to determine whether or not there is a relationship between sets of data and to predict values. Pupils will start the half term by consolidating previous learning on fractions by finding fractions of an amount and fluently converting between fractions, decimals and percentages. They will then find percentages of an amount and use percentages to solve problems. This then leads to calculating percentage increases and decreases, using percentages in real-life situations and calculating VAT (value added tax). |
| Spring One | **Equations, inequalities and sequences**<br>**Angles** | At the start of this half term pupils will develop their understanding of equations. This will start with rearranging simple linear equations, building up to equations with unknowns on both sides. This naturally leads to inclusive and exclusive inequalities which we will solve and represent on a number line. Pupils will then use formulae to substitute and change the subject, before working on continuing arithmetic sequences and finding the nth term. Pupils will extend their previous work on geometry by finding missing angles on parallel lines and in triangles. They will develop this into looking at angles in polygons and explaining why some polygons tessellate. |
| Spring Two | **Averages and Range**<br>**Perimeter, area and volume** | They will then work on handling data, looking again at averages and range but extending this to summarising the data in grouped frequency tables and stem and leaf diagrams. We will also relate this work to real life, discussing how to sample and whether data is affected by bias. Pupils will then calculate the perimeter and area of rectangles, parallelograms, triangles, trapezia and compound shapes and use these skills to find the surface area of a prism. Pupils will then develop this understanding to calculate the volume of cuboids and other prisms. We will round up by solving problems involving surface area and volume and converting between measures of volume. |
| Summer One | **Graphs**<br>**Transformations** | Pupils will start this half term by developing their understanding of graphs from Year 9. They will first plot straight-line graphs from tables of values or a rule, then find the gradient and intercept. This will lead to identifying parallel lines and using the form $y = mx + c$. Sketching graphs will then extend to interpreting real life graphs in a variety of contexts. We will then study transformations, which relies on the concepts encountered in the previous topic, and also knowledge of geometrical shapes and relationships. Pupils will learn how to translate, reflect, rotate and enlarge shapes on coordinate axes and how to identify and describe a transformation. These skills will then allow pupils to describe combined transformations of shapes on a grid. |
| Summer Two | **Ratio and Proportion**<br>**Right angled Triangles** | In Year 8 pupils studied ratio and scale, and this understanding is now developed more formally to employ ratio notation to divide a quantity into several parts in a given ratio. They will use the unitary method to solve proportion problems, work out which product is better value for money and recognise and use direct proportion on a graph. The topic of right-angled triangles combines many geometrical ideas covered last year. Pupils will know and use the formula for Pythagoras' theorem and use it to solve problems. This will develop into using trigonometry to find the lengths of sides and angles in a right-angled triangle and knowing the exact values of the sine, cosine and tangent of some angles. |