*Year: 11*
*Subject: Maths*

| *Autumn Term* | | |
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| *Overarching Topic:* | | |
| *What has come before and what comes later:* | *Year 10 scheme of work* | |
| | *Rounding, approximations, probability with tree diagrams and Venn diagrams, distance-time graphs, quadratic equations, vectors* | *Transformations of graphs, functions, equations of straight lines, circle equations and tangents, kinematics, iteration, vectors* |
| | *Foundation* | *Higher* |
| *The Big Questions (What questions will students be able to answer upon mastery of the topic?)* | • *Can you identify parts of a circle including: chord, tangent, arc, sector and segment?*<br>• *Can you calculate the area of a circle?*<br>• *Can you calculate the circumference of a circle?*<br>• *Can you calculate areas and perimeters of simple sectors?*<br>• *Can you complete calculations in terms of π?*<br>• *Can you calculate the surface area and volume of spheres, pyramids, cones and composite shapes?*<br>• *Can you derive, solve and interpret simultaneous equations?*<br>• *Can you use graphs to find solutions to simultaneous equations?*<br>• *Do you know Pythagoras' theorem?*<br>• *Can you calculate the hypotenuse of a right-angled triangle using Pytahgoras' theorem?*<br>• *Can you calculate one of the sides of a right-angled triangle using Pytahgoras' theorem which is not the hypotenuse?* | • *Can you apply systematic listing strategies including use of the product rule for counting?*<br>• *Can you calculate the probability of independent and dependent combined events, including using tree diagrams and other representatives?*<br>• *Can you calculate and interpret conditional probabilities through representation using expected frequencies with two-=way tables, tree diagrams and Venn diagrams?*<br>• *Can you rearrange formulae to change the subject?*<br>• *Can you simplify and manipulate algebraic expressions (including surds and algebraic fractions) by expanding products of two or kore binomials and by factorising quadratic expressions of the form $ax^2 + bx + c$?*<br>• *Do you know the difference between and identity and equation?* |

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| | • *Do you know the trigonometric ratios?*<br>• *Can you identify which trigonometric ratio to use on a right angle triangle?*<br>• *Can you use the sine, cosine and tangent ratio to find unknown sides and angles?*<br>• *Do you know exact values of sin* **θ**, cos **θ** and tan **θ** when **θ** =30º, 45º and 60º?<br>• Can you solve problems involving direct and inverse proportion?<br>• Can you set up equations involving direct and inverse proportion?<br>• Can you recognise graphs for direct and inverse proportion?<br>• | • *Can you argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments and proofs?*<br>• *Can you use Pythagoras' theorem in 2D and 3D problems?*<br>• *Can you use trigonometry in 2D and 3D problems?*<br>• *Do you know exact values of sin* **θ**, cos **θ** and tan **θ** when **θ** =30º, 45º and 60º?<br>• *Do you know the sine rule and can you apply it?*<br>• *Do you now the cosine rule and can you apply it?*<br>• *Do you know how to calculate the area of a triangle which does not contain a right angle?*<br>• *Can you recognise and sketch the graphs of sinx, cosx and tanx?*<br>• *Can you sketch translations and reflections of a given function?* |