**Curriculum Plan – Year 10 and Year 11.**

**GCSE HIGHER (Pearson Edexcel 2 Year GCSE Course)**

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| **Year 10** | |
| **Term 1** | **Term 2** |
| Unit 1: Number  * Use pictures or lists to help you to solve problems. * Work out the total number of ways of performing a series of tasks. * Estimate an answer. * Use place value to answer questions. * Write a number as the product of its prime factors. * Find the HCF and LCM of two numbers. * Use powers and roots in calculations. * Multiply and divide using index laws. * Work out a power raised to a power. * Use negative indices. * Use fractional indices. * Write a number in standard form. * Calculate with numbers in standard form. * Understand the difference between rational and irrational numbers. * Simplify a surd. * Rationalise a denominator.  Unit 2: Algebra  * Use the rules of indices to simplify algebraic expressions. * Expand brackets. * Factorise algebraic expressions. * Solve equations involving brackets and numerical fractions. * Use equations to solve problems. * Substitute numbers into formulae. * Rearrange formulae. * Distinguish between expressions, equations, formulae and identities. * Find the general term or 𝑛th term of an arithmetic sequence. * Determine whether a particular number is a term of a given arithmetic sequence. * Solve problems using geometric sequences. * Work out terms in Fibonacci sequences. * Find the 𝑛th term of a quadratic sequence. * Expand the product of two brackets. * Use the difference of two squares. * Factorise quadratics expressions of the form ‘𝑥^(2)’ + 𝑏𝑥 + 𝑐.  Unit 3: Interpreting and representing data  * Construct and use back-to-back stem and leaf diagrams. * Construct and use frequency polygons and pie charts. * Plot and interpret time series graphs. * Use trends to predict what might happen in the future. * Plot and interpret scatter graphs. * Determine whether or not there is a linear relationship between two variables. * Draw a line of best fit on a scatter graph. * Use the line of best fit to predict values. * Decide which average is best for a set of data. * Estimate the mean and range from a grouped frequency table. * Find the modal class and the class containing the median. * Construct and use two-way tables. * Choose appropriate diagrams to display data. * Recognise misleading graphs.  Unit 4: Fractions, ratio and percentages  * Add, subtract, multiply and divide fractions and mixed numbers. * Find the reciprocal of an integer, decimal or fraction. * Write ratios in the form 1 : 𝑛 or 𝑛 : 1. * Compare ratios. * Find quantities using ratios. * Solve problems involving ratios. * Use bar models to help solve problems. * Convert between currencies and measures. * Recognise and use direct proportion. * Solve problems involving ratios and proportion. * Calculate using percentages and ratios. * Work out percentage increases and decreases. * Solve real-life problems involving percentages. * Calculate using fractions, decimals and percentages. * Convert a recurring decimal to a fraction.  Unit 5: Angles and trigonometry  * Derive and use the sum of angles in a triangle and in a quadrilateral. * Derive and use the fact that the exterior angle of a triangle is equal to the sum of the two opposite interior angles. * Calculate the sum of the interior angles of a polygon. * Use the interior angles of polygons to solve problems. * Use 𝑥 for the unknown to help you solve problems. * Know the sum of the exterior angles of a polygon. * Use the angles of polygons to solve problems. * Calculate the length of the hypotenuse in a right-angled triangle. * Solve problems using Pythagoras’ theorem. * Calculate the length of a shorter side in a right-angled triangle. * Solve problems using Pythagoras’ the * Use trigonometric ratios to find lengths in a right-angled triangle. * Use trigonometric ratios to solve problems. * Find angles of elevation and angles of depression. * Use trigonometric ratios to calculate an angle in a right-angled triangle. * Use trigonometric ratios to solve problems. * Know the exact values of the sine, cosine and tangent of some angles. | Unit 6 : Graphs  * Find the gradient and 𝑦-intercept from a linear equation. * Rearrange an equation into the form 𝑦 = 𝑚𝑥 + 𝑐. * Compare two graphs from their equations. * Plot graphs with equations 𝑎𝑥 + 𝑏𝑦 = 𝑐. * Sketch graphs using the gradient and intercepts. * Find the equation of a line, given its gradient and one point on the line. * Find the gradient of a line through two points. * Draw and interpret distanceâ€“time graphs. * Calculate average speed from a distanceâ€“time graph. * Understand velocityâ€“time graphs. * Find acceleration and distance from velocityâ€“time graphs. * Draw and interpret real-life linear graphs. * Recognise direct proportion. * Draw and use a line of best fit. * Find the coordinates of the midpoint of a line segment. * Find the gradient and length of a line segment. * Find the equations of lines parallel or perpendicular to a given line. * Draw graphs of cubic functions. * Solve cubic equations using graphs. * Draw graphs of reciprocal functions. * Recognise a graph from its shape. * Interpret linear and non-linear real-life graphs. * Draw the graph of a circle.  Unit 7 : Area and volume  * Find the area and perimeter of compound shapes. * Recall and use the formula for the area of a trapezium. * Convert between metric units of area. * Write error intervals for rounded values. * Calculate upper and lower bounds. * Convert between metric units of volume. * Calculate volumes and surface areas of prisms. * Calculate the perimeter and area of semicircles and quarter circles. * Calculate arc lengths, angles and areas of sectors of circles. * Calculate volume and surface area of a cylinder and a sphere. * Solve problems involving volumes and surface areas. * Calculate volume and surface area of pyramids and cones. * Use a flow diagram to help you solve problems.  Unit 8: Transformations and constructions  * Draw plans and elevations of 3D solids. * Reflect a 2D shape in a mirror line. * Rotate a 2D shape around a centre of rotation. * Describe reflections and rotations. * Carry out and describe combinations of reflections. * Enlarge shapes by fractional and negative scale factors about a centre of enlargement. * Translate a shape using a vector. * Carry out and describe combinations of different transformations. * Draw and use scales on maps and scale drawings. * Solve problems involving bearings. * Construct triangles using a ruler and compasses. * Construct the perpendicular bisector of a line. * Construct the shortest distance from a point to a line using a ruler and compasses. * Bisect an angle using a ruler and compasses. * Construct angles using a ruler and compasses. * Construct shapes made from triangles using a ruler and compasses * Draw a locus and use to solve problems.  Unit 9: Equations and inequalities  * Rearrange and solve quadratic equations. * Find the roots of quadratic equations. * Solve more complex quadratic equations. * Use the quadratic formula to solve a quadratic equation. * Complete the square for a quadratic expression. * Solve quadratic equations by completing the square. * Solve simple simultaneous equations. * Solve simultaneous equations for real-life situations. * Use simultaneous equations to find the equation of a straight line. * Solve linear simultaneous equations where both equations are multiplied. * Write equations involving two unknowns to describe real-life situations, and then solve them. * Solve simultaneous equations with one quadratic equation.   Unit 10: Probability  * Use the product rule for finding the number of outcomes for two or more events. * Use two-way tables and sample space diagrams to solve probability problems. * Identify mutually exclusive outcomes and events. * Find the probabilities of mutually exclusive outcomes and events. * Solve probability problems. * Estimate the expected results for experimental and theoretical probabilities. * Compare real results with theoretical expected values to decide if a game is fair. * Draw and use frequency trees. * Calculate probabilities of independent events. * Use probability tree diagrams to solve problems. * Decide if two events are independent. * Draw and use tree diagrams to solve conditional probability problems. * Use two-way tables to calculate conditional probability. * Use set notation. * Use Venn diagrams to solve conditional probability problems. |

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| **Year 11** | |
| **Term 1** Unit 16: Circle theorems  * Solve problems involving angles, triangles and circles. * Understand and use facts about chords and their distance from the centre of a circle. * Solve problems involving chords and radii. * Understand and use facts about tangents at a point and from a point. * Solve angle and length problems involving circles and tangents. * Understand, prove and use facts about angles subtended at the centre and the circumference of circles. * Understand, prove and use facts about the angle in a semicircle. * Solve angle problems using circle theorems. * Find the equation of the tangent to a circle at a given point.  Unit 17: More algebra  * Change the subject of a formula where the power or root of the subject appears. * Change the subject of a formula where the subject appears twice. * Add and subtract algebraic fractions. * Multiply and divide algebraic fractions. * Change the subject of a formula involving fractions where all the variables are in the denominators. * Simplify algebraic fractions. * Add and subtract more complex algebraic fractions. | **Term 2**  Revision of topics and Past Paper Practice |
| * Multiply and divide more complex algebraic fractions. * Prove a result using algebra. * Simplify expressions involving surds. * Expand expressions involving surds. * Rationalise the denominator of a fraction. * Solve equations that involve algebraic fractions. * Use function notation. * Find composite functions. * Find inverse functions.  Unit 18: Vectors and geometric proof  * Understand and use vector notation. * Work out the magnitude of a vector. * Calculate using vectors and represent the solutions graphically. * Identify when vectors are parallel. * Calculate the resultant of two vectors. * Solve problems using vectors. * Use the resultant of two vectors to solve vector problems. * Express points as position vectors. * Prove lines are parallel. * Prove points are collinear. * Solve geometric problems in two dimensions using vector methods, including where vectors are divided in a given ratio. * Apply vector methods for simple geometric proofs.  Unit 19: Proportion and graphs  * Write and use equations to solve problems involving direct proportion. * Write and use equations to solve problems involving direct proportion. * Solve problems involving square and cubic proportionality. * Write and use equations to solve problems involving inverse proportion. * Use and recognise graphs showing inverse proportion. * Recognise graphs of exponential functions. * Sketch graphs of exponential functions. * Match equations to graphs. * Calculate the gradient of a tangent at a point. * Estimate the area under a non-linear graph. * Understand the relationship between translating a graph and the change in its function notation. * Understand the effect reflecting a curve in one of the axes has on its function form. |  |
| **Term 3** |  |
| Past Papers and Exams |  |