**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.
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| **Term 3** |  |
| Past Papers and Exams |  |