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

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

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| Year 10 | |
| **Term 1** | |
| Unit 1: Number Calculation   * Apply systematic listing strategies. * Use priority of operations with positive and negative numbers. * Simplifying calculations by cancelling. * Use inverse operations.   Decimal Numbers   * Round to a given number of decimal places. * Multiply and divide decimal numbers. * Use pictures to help you solve problems.   Place Value   * Convert metric measures. * Write decimal numbers of millions. * Round to a given number of significant figures. * Estimate answers to calculations. * Use one calculation to find the answer to another.   Factors and Multiples   * Recognise 2-digit prime numbers. * Find factors and multiples of numbers. * Find common factors and common multiples of two numbers. * Find the HCF and LCM of two numbers by listing.   Squares, Cubes and Roots   * Find square roots and cube roots. * Recognise powers of 2, 3, 4 and 5. * Understand surd notation on a calculator.   Index Notation   * Use index notation for powers of 10. * Use index notation in calculations. * Use the laws of indices.   Prime Factors   * Write a number as the product of its prime factors. * Use prime factor decomposition and Venn diagrams to find the HCF and LCM.  Unit 2: Algebra Algebraic Expressions   * Use correct algebraic notation. * Write and simplify expressions.   Simplifying Expressions   * Use the index laws. * Multiply and divide expressions.   Substitution   * Substitute numbers into expressions. * Write more complex expressions.   Formulae   * Recognise the difference between a formula and an expression. * Write and use formulae. * Use smaller numbers to help you see a pattern.   Expanding Brackets   * Expand brackets. * Simplify expressions with brackets. * Write and use formulae with brackets.   Factorising   * Factorise algebraic expressions. * Use the identity symbol ≡ and the not equal to symbol ≠.   Using Expressions and Formulae   * Write expressions and simple formulae. * Use maths and science formulae. | Unit 3: Graphs tables and charts Frequency tables   * Designing tables and data collection sheets. * Reading data from tables.   Two-way tables   * Use data from tables. * Design and use two-way tables.   Representing Data   * Draw and interpret comparative and composite bar charts. * Interpret and compare data shown in bar charts, line graphs and histograms.   Time Series   * Plot and interpret time series graphs. * Use trends to predict what might happen in the future.   Stem and Leaf Diagrams   * Construct and interpret stem and leaf and back-to-back stem and leaf diagrams.   Pie Charts   * Draw and interpret pie charts.   Scatter Graphs   * Plot and interpret scatter graphs. * Determine whether or not there is a relationship between sets of data.   Line of Best Fit   * Draw a line of best fit on a scatter graph. * Use the line of best fit to predict values.  Unit 4: Fractions and Percentages Working with Fractions   * Compare fractions. * Add and subtract fractions. * Use fractions to solve problems   Operations with Fractions   * Find a fraction of a quantity or measurement. * Use fractions to solve problems. * Use bar models to help you solve problems.   Multiplying Fractions   * Multiply whole numbers, fractions and mixed numbers. * Simplify calculations by cancelling.   Dividing Fractions   * Divide a whole number by a fraction. * Divide a fraction by a whole number or a fraction.   Fractions and Decimals   * Convert fractions to decimals and vice versa. * Use decimals to find quantities. * Work out divisions with decimal answers. * Write one number as a fraction of another.   Fractions and Percentages   * Convert percentages to fractions and vice versa. * Write one number as a percentage of another.   Calculating Percentages 1   * Convert percentages to decimals and vice versa. * Find a percentage of a quantity. * Use percentages to solve problems. * Calculate simple interest.   Calculating Percentages 2   * Calculate percentage increases and decreases. * Use percentages in real-life situations. * Calculate VAT (value added tax).  Unit 5: Equations, Inequalities and Sequences Solving Equations 1   * Understand and use inverse operations. * Solve simple linear equations.   Solving Equations 2   * Solve two-step equations.   Solving Equations with Brackets   * Solve linear equations with brackets. * Solve equations with unknowns on both sides.   Introduction to Inequalities   * Use correct notation to show inclusive and exclusive inequalities. * Show inequalities on a number line. * Write down whole numbers which satisfy an inequality. * Solve simple linear inequalities.   More Inequalities   * Solve two-sided inequalities.   Using Formulae   * Substitute values into formulae and solve equations. * Change the subject of a formula. * Know the difference between an expression, an equation and a formula.   Generating Sequences   * Recognise and extend sequences   Using the nth term of a sequence   * Use the *n*th term to generate terms of a sequence. * Find the *n*th term of an arithmetic sequence. |
| **Year 10** | |
| **Term 2** | |
| Unit 6: Angles Properties of Shape   * Solve geometric problems using side and angle properties of quadrilaterals. * Identify congruent shapes.   Angles in Parallel Lines   * Understand and use the angle properties of parallel lines. * Find missing angles using corresponding and alternate angles.   Angles in Triangles   * Solve angle problems in triangles. * Understand angle proofs about triangles.   Exterior and Interior Angles   * Calculate the interior and exterior angles of regular polygons. * Calculate the interior and exterior angles of polygons. * Explain why some polygons fit together and others do not.  Unit 7: Averages and Range Mean and Range   * Calculate the mean from a list and from a frequency table. * Compare sets of data using the mean and range.   Mode, Median and Range   * Find the mode, median and range from a stem and leaf diagram. * Identify outliers. * Estimate the range from a grouped frequency table.   Types of Average   * Recognise the advantages and disadvantages of each type of average. * Find the mode, modal class and median from a frequency table.   Estimate the Mean   * Estimate the mean of grouped data.   Sampling   * Understand the need for sampling. * Understand how to avoid bias.  Unit 8: Perimeter, Area and Volume Rectangles, parallelograms and triangles   * Calculate the perimeter and area of rectangles, parallelograms and triangles. * Calculate a missing length, given the area.   Trapezia and changing units   * Calculate the area and perimeter of trapezia. * Find the height of a trapezium given its area. * Convert between area measures.   Area of Compund Shapes   * Calculate the perimeter and area of shapes made from triangles and rectangles. * Calculate areas in hectares, and convert between ha and ‘m^(2)’.   Surface Area   * Calculate the surface area of a cuboid. * Calculate the surface area of a prism.   Volume of a Prism   * Calculate the volume of a cuboid. * Calculate the volume of a prism. * Use a flow diagram to help solve problems.   More volume and surface area   * Convert between measures of volume. * Solve problems involving surface area and volume. | Unit 9: Graphs Coordinates   * Find the midpoint of a line segment. * Recognise, name and plot straight-line graphs parallel to the axes. * Recognise, name and plot the graphs of 𝑦 = 𝑥 and 𝑦 = −𝑥.   Linear Graphs   * Generate and plot coordinates from a rule. * Plot straight-line graphs from tables of values. * Draw graphs to represent relationships.   Gradient   * Find the gradient of a line. * Identify and interpret the gradient from an equation. * Understand that parallel lines have the same gradient.   Y = mx + c   * Understand what 𝑚 and 𝑐 represent in 𝑦 = 𝑚𝑥 + 𝑐. * Find the equations of straight-line graphs. * Sketch graphs given the values of 𝑚 and 𝑐.   Real life graphs   * Draw and interpret graphs from real data. * Draw and interpret a range of graphs. * Understand when predictions are reliable.   Distance time graphs   * Use distance–time graphs to solve problems. * Draw distance–time graphs. * Interpret rate of change graphs.  Unit 10: Transformations Translation   * Translate a shape on a coordinate grid. * Use a column vector to describe a translation.   Reflection   * Draw a reflection of a shape in a mirror line. * Draw reflections on a coordinate grid. * Describe reflections on a coordinate grid.   Rotation   * Rotate a shape on a coordinate grid. * Describe a rotation.   Enlargement   * Enlarge a shape by a scale factor. * Enlarge a shape using a centre of enlargement. * Identify the scale factor of an enlargement. * Find the centre of enlargement. * Describe an enlargement.   Combining Transformations   * Transform shapes using more than one transformation. * Describe combined transformations of shapes on a grid. |
| **Term 3** | |
| Unit 11: Ratio and Proportion Writing ratios   * Use ratio notation. * Write a ratio in its simplest form. * Solve simple problems using ratios.   Using ratios   * Solve simple problems using ratios. * Use ratios involving decimals. * Divide a quantity into 2 parts in a given ratio. * Divide a quantity into 3 parts in a given ratio. * Solve word problems using ratios. * Use bar models to help solve ratio problems.   Ratios and measures   * Write and use ratios for shapes and their enlargements. * Use ratios to convert between units.   Comparing using ratio   * Compare ratios. * Write ratios in the form 1 : 𝑛 or 𝑛 : 1. * Solve ratio and proportion problems.   Using Proportion   * Use the unitary method to solve proportion problems. * Solve proportion problems in words. * Work out which product is better value for money.   Proportion graphs   * Recognise and use direct proportion on a graph. * Understand the link between the unit ratio and the gradient.   Proportion Problems   * Recognise different types of proportion. * Solve word problems involving direct and inverse proportion.  Unit 12: Right angles triangles Pythagoras’ theorem   * Understand Pythagoras’ theorem. * Calculate the length of the hypotenuse in a right-angled triangle. * Solve problems using Pythagoras’ theorem. * Calculate the length of a line segment 𝐴𝐵. * Calculate the length of a shorter side in a right-angled triangle. * Solve problems using Pythagoras' theorem.   Trigonometry   * Understand and recall the sine ratio in right-angled triangles. * Use the sine ratio to calculate the length of a side in a right-angled triangle. * Use the sine ratio to solve problems. * Understand and recall the tangent ratio in right-angled triangles. * Use the tangent ratio to calculate the length of a side in a right-angled triangle * Use the tangent ratio to calculate an angle in a right-angled triangle. * Solve problems using an angle of elevation or angle of depression. * Understand and recall trigonometric ratios in right-angled triangles. * Use trigonometric ratios to solve problems. * Know the exact values of the sine, cosine and tangent of some angles.  Unit 13: Probability  * Calculate probabilities from equally likely events. * Calculate probabilities of mutually exclusive and exhaustive events. * Solve probability problems. * Work out probabilities from sample space diagrams. * Draw and use sample space diagrams to solve probability problems. * Estimate and interpret probabilities based on experimental data. * Make predictions from experimental data. * Understand the language of sets and Venn diagrams. * Use Venn diagrams to solve probability problems. * Solve problems using frequency trees and tree diagrams. * Work out probabilities using tree diagrams. * Understand independent events. * Understand when events are not independent. * Solve probability problems involving events that are not independent. | Unit 14: Multiplicative Reasoning Percentages   * Calculate a percentage profit or loss. * Express a given number as a percentage of another in more complex situations. * Find the original amount given the final amount after a percentage increase or decrease.   Growth and Decay   * Find an amount after repeated percentage changes. * Solve growth and decay problems.   Compound measures   * Solve problems involving compound measures.   Distance, speed and time   * Convert between metric measures of speed. * Calculate average speed, distance and time. * Use formulae to calculate speed and acceleration.   Direct and inverse proportion   * Use ratio and proportion in measures and conversions. * Use inverse proportion.  Unit 15: Constructions, Loci and bearings 3D Solids   * Recognise 3D shapes and their properties. * Describe 3D shapes using the correct mathematical words. * Understand the 2D shapes that make up 3D objects   Plans and elevations   * Identify and sketch planes of symmetry of 3D shapes. * Draw and interpret plans and elevations of 3D shapes.   Accurate drawing   * Make accurate drawings of triangles using a ruler, protractor and compasses. * Identify SSS, ASA, SAS and RHS triangles as unique from a given description. * Identify congruent triangles. * Accurately draw angles and 2D shapes using a ruler, protractor and compasses. * Construct a polygon inside a circle. * Draw accurate nets.   Scale drawing and maps   * Draw diagrams to scale. * Use scales on maps and diagrams to work out lengths and distances. * Solve problems involving scales.   Constructions   * Bisect angles and lines using rulers and compasses. * Find the shortest distance from a point to a line.   Bearings   * Find and use three-figure bearings. * Use angles on parallel lines to work out bearings. * Solve problems involving bearings and scale diagrams   Loci and regions   * Draw loci for the path of points that follow a given rule. * Identify regions bounded by loci to solve practical problems. |
| **Year 11** | |
| **Term 4** | |
| Unit 16: Quadratic Equations and Graphs  * Multiply double brackets. * Recognise quadratic expressions. * Square single brackets. * Plot graphs of quadratic functions. * Recognise a quadratic function. * Use quadratic graphs to solve problems. * Solve quadratic equations 𝑎 ‘𝑥^(2)’ + 𝑏𝑥 + 𝑐 = 0 using a graph. * Solve quadratic equations 𝑎 ‘𝑥^(2) + 𝑏𝑥 + 𝑐 = 𝑘 using a graph. * Factorise quadratic expressions. * Solve quadratic functions algebraically.  Unit 17: Perimeter area, volume Circumference of circle   * Calculate the circumference of a circle. * Solve problems involving the circumference of a circle. * Calculate the circumference and radius of a circle. * Write error intervals for rounded and truncated values.   Area of circle   * Work out the area of a circle. * Work out the radius or diameter of a circle. * Solve problems involving the area of a circle. * Give answers in terms of 𝜋.   Semi circles and sectors   * Understand and use maths language for circles and perimeters. * Work out areas and perimeters of sectors of circles.   Composite 2D shapes and cylinders   * Solve problems involving areas and perimeters of 2D shapes. * Work out the volume and surface area of cylinders.   Pyramids and cones   * Work out the volume of a pyramid. * Work out the surface area of a pyramid. * Work out the volume of a cone. * Work out the surface area of a cone.   Spheres and compound solids   * Work out the volume and surface area of a sphere. * Work out the volume and surface area of composite solids. | Unit 18: Fractions, indices and standard form  * **Multiply and divide mixed numbers and fractions.** * To know and use the laws of indices. * Write large numbers in standard form. * Convert numbers from standard form into ordinary numbers. * Write small numbers in standard form. * Convert numbers from standard form with negative powers into ordinary numbers.  Unit 19: Congruence, similarity and vectors Similarity   * Understand similarity. * Use similarity to solve angle problems. * Find the scale factor of an enlargement. * Use similarity to solve problems. * Determine when two shapes are definitely not (or may not be) similar. * Understand the similarity of regular polygons. * Calculate perimeters of similar shapes.   Congruence   * Recognise congruent shapes. * Use congruence to work out unknown angles. * Use congruence to work out unknown sides and angles in triangles and shapes made of triangles.   Vectors   * Add vectors. * Find the resultant of two vectors. * Subtract vectors. * Find multiples of a vector. * Identify two column vectors that are parallel. * Solve problems using vectors.  Unit 20 Algebra  * Draw and interpret non-linear graphs to solve problems. * Solve simultaneous equations by drawing a graph. * Write and solve simultaneous equations. * Solve simultaneous equations algebraically. * Change the subject of a formula. * Identify expressions, equations, formulae and identities. * Prove results using algebra. |
| Term 5 Revision | |
| Term 6 Revision and Exams | |