**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: NumberCalculation* 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: AlgebraAlgebraic 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 chartsFrequency 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 PercentagesWorking 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 SequencesSolving 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.
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| **Year 10** |
| **Term 2** |
| Unit 6: AnglesProperties 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 RangeMean 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 VolumeRectangles, 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: GraphsCoordinates* 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: TransformationsTranslation* 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.
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| **Term 3** |
| Unit 11: Ratio and ProportionWriting 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 trianglesPythagoras’ 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 ReasoningPercentages* 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 bearings3D 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.
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| **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, volumeCircumference 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 vectorsSimilarity* 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.
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| Term 5 Revision |
| Term 6 Revision and Exams |