KS4 Maths Curriculum Plan 2014-15

7 Hours Taught per Fortnight
Edexcel Linear Specification
 http://www.edexcel.com/quals/gcse/gcse10/maths/maths-a/Pages/default.aspx

GCSE Maths is offered at two tiers, Higher and Foundation. In Year 9, all students complete the same units at an appropriate level as they are designed to promote the mathematical fluency and reasoning that is required to succeed at GCSE. In Year 10, the top 4 sets start the higher course and the remaining two begin to study the Foundation course. However, there is a large overlap between the two courses and the final decision about which tier to enter is taken after the Year 11 mock examinations.

Year 9

Topic	Content summary
In the Frame Investigation	Sequences and Nth Terms, Operations on Integers and Decimals including BIDMAS, Negative Numbers.
What have Mathematicians done for us?	Indices & Roots, Standard Form, Factors, Multiples & Primes, Rounding & Estimation.
Rectangles, Expressions and Equations	Forming and Solving Equations, Expressions and Formulae, Simultaneous Equations.
How Big Could it Be?	Forming and Solving Inequalities, Rounding and Estimating, Reading and Measuring.
Are There Fractions?	Calculations with Fractions.
Pythagoras' Theorem	Pythagoras' Theorem, Area and Perimeter, Functions and Graphs, Trigonometry.
Angle Hunt	Angles on Lines, Angles in Polygons, Geometrical Reasoning.
Coke Cans and Food Boxes	2D Representations of 3D shapes, 3D Shapes, Volume & Surface Area, Area & Perimeter, Ratio & Proportion, Working with Units.
Sports Profiling	Graphs, Charts & Diagrams, Using Averages, Compound Measures, Working with Units.
How can I be more Money Savvy?	Percentage Changes, Real Life Graphs, Proportional Reasoning, Ratio & Proportion.
Would you Place Money on It?	Probability of Events, Probability Calculations, Set Theory.
Transformations and School Plans	Transformations, Geometrical Properties, Enlargement & Similarity, Trigonometry.
Construction and Movement	Loci & Construction, Congruency & Similarity.
What Can Angry Birds Teach us about Graphs?	Functions and Graphs, Coordinate Geometry, Forming and Solving Inequalities, Sequences & Nth Terms.

Year 10 and Year 11 Overview: Foundation Level

Units	Content Summary
Number	Ordering integers, properties of numbers, rounding and calculating with integers.
Decimals	Ordering decimals, calculating with decimals, approximations.
Fractions	Equivalent fractions, calculating with fractions, equivalence of fractions and decimals
Using a Calculator	Using calculators efficiently and interpreting their displays.
Percentages	Equivalence of fractions, decimals and percentages, calculating with percentages.

Ratio and Proportion	Use ratio notation, simplify ratios, link fractions and ratios, divide quantities using ratios and solve problems using proportion.
Algebra	Manipulating algebraic expressions, substitution.
Sequences	Generate terms of a sequence and use linear expressions to describe the nth term.
Graphs 1	Use correct conventions for the four quadrants and coordinates, recognise and plot straight line graphs, find gradients of lines.
Linear Equations & Inequalities	Create and solve linear equations and inequalities.
Graphs 2	Construct linear equations from real life problems, interpret real life graphs, generate and plot quadratic equations and approximate solutions.
Formulae	Derive a formula, substitution, change the subject.
2D Shapes	Recall properties of quadrilaterals, understand congruence and similarity, measure and draw lines and angles, construct triangles and circles.
Angles 1	Recall and use angle facts.
Angles 2	Calculate and use angles in polygons, bearings, further constructions and scale drawings.
Perimeter and Area	Finding the perimeter and area of shapes made from rectangles and triangles.
Circles	Calculating the circumference and area of circles.
Loci	Construct loci.
2D Shapes	Use 2D representations, calculate volume and surface area of 3D shapes.
Transformations	Rotations, reflections, translations and enlargements.
Pythagoras' Theorem	Use Pythagoras' Theorem to solve problems.
Measures	Interpret scales, convert between units, estimation.
Collecting Data	Design and conduct experiments and surveys.
Representing Data	Produce and interpret graphs and charts.
Averages & Range	Calculate and interpret averages and the range.
Scatter Graphs	Draw and interpret scatter graphs.
Probability	Calculating with probabilities and comparing experimental and theoretical probabilities

Year 10 and Year 11 Overview: Higher Level

Integers and Decimals	Order and calculate with integers and decimals, properties of numbers, powers and roots, rounding and limits of accuracy, using calculators efficiently.
Fractions	Understand equivalent fractions, calculate with fractions, order rational numbers.
Fractions, Decimals and Percentages	Interpret fractions, decimals and percentages as operators, calculate with percentages, understand the equivalence between fractions decimals and percentages.
Ratio and Proportion	Understand the link between ratios and fractions, use ratio and proportion to solve problems, direct and inverse proportion (algebraic).
Index Notation and Surds	Use index laws, interpret and calculate with standard form, calculate with surds.
Algebra	Manipulate algebraic expressions, generate terms of a sequence, use linear expressions to describe the nth term rule.
Formulae and Linear Equations	Derive formulae and change the subject, set up and solve simple equations, solve linear inequalities and represent solutions on a

	number line
Linear Graphs	Recognise and plot straight line graphs, understand the form y=mx+c, find and understand gradients, solve linear inequalities in two variables and represent the solution on a graph, construct linear graphs from real life situations.
Simultaneous Equations, Quadratic Equations and Graphs	Manipulate quadratic expressions, generate and plot quadratic functions and use to find approximate solutions, solve quadratic equations, solve simultaneous equations in two unknowns.
Trial and Improvement	Use trial and improvement systematically to find approximate solutions, use a calculator efficiently and effectively.
Further Graphs and Functions	Draw, sketch and recognise cubic, reciprocal, exponential and trigonometric functions.
Transformations of Functions	Recognise and describe transformations of functions.
Shape and Angles	Recall and use angles facts, recall and use properties of quadrilaterals, calculate and use angle sums of polygons, understand and use bearings.
Construction and Loci	Use and interpret maps and scale drawings, construct loci.
Perimeter and Area	Calculate perimeters and areas of shapes made from triangles and rectangles, find circumference and area of circles, use pi in an exact calculation.
Pythagoras and Trigonometry	Use Pythagoras' Theorem in 2D and 3D, use trigonometric ratios to solve 2D and 3D problems.
Surface Area and Volume	Use 2D representations, find surface area and volumes of 3D shapes, convert measures.
Transformations	Recognise reflection and rotation symmetry of 2D shapes, reflections, rotations, translations and enlargements.
Similarity and Congruence	Understand congruence and similarity, understand and use the effect of enlargement for perimeter, area and volume.
Circle Theorems	Understand and construct proofs using circle theorems.
Sine and Cosine Rules	Use sine and cosine rules to solve 2D and 3D problems, calculate the area of a triangle using ½ absinC.
Vectors	Use vectors to solve problems.
Measures and Compound Measures	Interpret scales, recognise the inaccuracy of measurements, convert measurements, make sensible estimates, draw and interpret distance time graphs, interpret non-linear graphs modelling real life situations.
Collecting Data	Design an experiment or survey.
Displaying Data	Read and interpret graphs and charts.
Averages and Range	Calculate and interpret averages and the range.
Probability	Understand theoretical and experimental probability, calculate with independent and conditional probabilities, use tree diagrams to represent compound events.