



Mathematics Curriculum 2016-17

The curriculum in Mathematics is covered taught to all pupils depending upon their ability, not their age. When pupils join Parkside in Year 7, they will begin a 2-Year Mastery Scheme of Work. Topics will be taught for longer so that pupils will develop an in-depth understanding of the key building blocks of the Maths GCSE. There are 4 different Mastery Schemes of Work which are chosen dependent on the ability of the class.

When pupils start Year 9, a three-year GCSE Pathway is put in place. These pathways are personalised to the needs of the class. In Year 9 and 10 pupils will work through 2 Schemes of work and will complete a 3rd in the first term of Year 11. For the remainder of Year 11, lessons will be based around Exam Preparation and Revision.

There are many different schemes of work, starting with Aim 2 and working towards Aim 8/9. Each year the level of difficulty is increased so that pupils are continually stretched, but at a realistic pace. The Aim 4 and 5 schemes of work are differentiated between Higher and Foundation GCSE tiers. Our Pathways ensure that every pupil is pushed towards achieving a Grade 4, the equivalent of a Grade C.

The Overall Pathway for Mathematics is shown below:

Class	Year 7	Year 8	Class	Year 9	Year 10	Year 11*
7e1 7w1	Path 1 Mastery	Path 1 Mastery	9e1	Aim 6	Aim 7	Aim 8/9
			9e2	Aim 6	Aim 7	
7e2 7w2	Path 2 Mastery	Path 2 Mastery	9e3	Aim 5 Higher	Aim 6	
			9e4	Aim 4 Higher	Aim 5 Higher	Aim 6
7e3 7w3	Path 3 Mastery	Path 3 Mastery	9w1	Aim 4 Foundation	Aim 5 Foundation	
			9w2	Aim 3	Aim 4 Foundation	Aim 5 Foundation
7e4 7w4	Path 4 Mastery	Path 4 Mastery	9w3	Aim 3	Aim 4 Foundation	
			9w4	Aim 2	Aim 3	Aim 4 Foundation

Below is a brief outline of the topics taught in each of the schemes of work:

Aim 2	
Powers and Roots. Using simple angle facts. Linear and non-linear sequences. Negative numbers. Ordering decimals. Four functions of decimals and fractions. Area of quadrilaterals. Compound area. Rounding numbers and decimals. Scale diagrams. BIDMAS. Ratio & proportion.	Probability. Solving simple linear equations. Expanding single brackets. Simplifying algebraic expressions. Introduction to graphs. Substituting into expressions. Recipe problems. Calculating percentages of amounts. Introduction to circles & their properties. Fractions. Money problems. Venn Diagrams and Frequency Trees. Coordinates.

Aim 3	
Consolidate work covered in Aim 2. Laws of indices. HCF and LCM. Finding and using the nth term. Forming algebraic expressions. Factorising expressions into single brackets. Area and circumference of circles. Using more complex angle facts. Inequalities. Transformations	FDP. Calculating the averages from tables. Drawing Venn Diagrams and Pie Charts. Comparing costs to work out best value. UExchange rates. Probabilities of two events happening. Estimating calculations. Surface area and volume. Single multipliers in percentages. Calculating percentage change.

Aim 4	
Consolidate work covered in Aim 3. Equivalent calculations & powers of 10. $Y = mx + c$. Plotting quadratic graphs. Compound area problems. Circular shapes. Expanding double brackets. Factorising quadratic expressions. Volume of prisms. Mixed numbers. Scatter graphs.	Solving inequalities. Forming & solving equations. Reverse ratio problems. Pythagoras' Theorem. Expectation & experimentation in prob. Introduction to tree diagrams. Angles in parallel lines. Introduction to trigonometry. Using formulae. Bearings and scale diagrams.

Aim 5

Consolidate work covered in Aim 4.
Estimating complex calculations.
Solving quadratic by factorisation.
Area & Arc length of sectors.
Rearranging formulae.
Simultaneous Equations.
Angles in polygons.
Vectors.
Plotting cubic & reciprocal graphs.
Time Series graphs.
Standard form.

Mixed ratio and proportion problems.
Pythagoras & Trigonometry.
Cumulative frequency graphs & box plots.
Direct proportion.
Independent tree diagrams.
Growth and decay problems.
Real-life graphs.
Plans and elevations.
Speed & density formulae.
Simple similar shapes.

Aim 6

Consolidate work covered in Aim 5.
Calculations with standard form.
Using the quadratic formula.
Applying Pythagoras and Trigonometry.
Forming and solving equations.
Calculating Upper and Lower bounds.
Applying knowledge of circles.
Parallel graphs.
Comparing data sets.
3D shape formulae.
Algebraic fractions.
Recurring decimals.

Compound interest problems.
Dependent tree diagrams.
Vectors.
Complex transformations.
Graphical inequalities.
Circle theorems.
Inverse proportion problems.
Quadratic sequences.
Loci.
Introduction to surds.
Similar shapes.

Aim 7

Consolidate work covered in Aim 6.
Solving all types of quadratics.
Intersection of quadratic and linear graphs.
Iterations.
Applying rearranging formulae.
3D Pythagoras' Theorem.
Trigonometric graphs.
Calculating with algebraic fractions.
Product rule for counting.
Calculations with surds.
Functions and inverse functions.

Rates of change.
Simple algebraic proofs.
Sine and Cosine Rules.
Vectors.
Conditional probabilities.
Histograms.
Drawing and using tree diagrams.
Analysing transformations.
Direct and inversely proportional relationships.
Compound problems.

Aim 8/9

Consolidate work covered in Aim 7.
Completing the square.
Perpendicular graphs.
Intersection of linear graphs and graphs of circles.
Forming & solving quadratic equations.
3D Trigonometry.
Solving equation with algebraic equations.
Exponential functions.
Translations of graphs.

Calculating gradients of and area under non-linear graphs.
Composite functions.
Find equations of tangents to circles.
Solving quadratic inequalities.
Area and volume similarity problems.
Proving circle theorems.
Algebraic proofs.
Complex vector proofs.
Algebraic tree diagrams.