



West Park School

Mathematics

GCSE Examination Summer 2024

In readiness for your GCSE examination in Mathematics you must **LEARN** and **REVISE** the following content and skills:

For Paper 1 (non-calculator), Paper 2 (calculator) and Paper 3 (calculator) you need to learn and revise the following:

Foundation Tier:

Number: Non-calculator multiplication and division, percentages, fractions, ratio, proportion, negative numbers, bidmas, learn the square, cube and prime numbers, factors and multiples, estimating, rounding, surds, standard form, rules of indices, product of prime factors, direct proportion.

Algebra: Solve equations and inequalities, expand brackets and simplify expressions, factorise algebraic expressions, write algebraic expressions, represent an inequality on a number line, find the n th term, draw a graph of an equation, find the equation of a straight line, change the subject of a formula, solve simultaneous equations.

Handling data: Find the mean, median, mode and range of a set of numbers, find the mean and median from a frequency table, estimate the mean of grouped data, draw a comparative bar chart, draw a frequency polygon, draw and use pie charts, use a two-way table, draw a Venn diagram, use distance time graphs, find the probability of a single event, find the probability of two events, draw a frequency tree, find relative frequency from probability experiments, product rule for counting, scatter diagrams and lines of best fit.

Geometrical reasoning: Transformations, vectors, volume, area, surface area, reflection and rotational symmetry, Pythagoras' Theorem, trigonometry, know the types of angles and triangles, find interior and exterior angles of polygons, find bearings, angles in parallel lines, plans and elevations, compound measures (speed-distance-time, density-mass-volume, force-pressure-area), compass constructions, bounds of measurement, conditions of congruency, know value of \sin , \cos and \tan 30° , 45° , 60° , 0° , 90° .

Higher Tier:

Everything on the **Foundation Tier** list, and...

Number: Expanding brackets and factorising with surds, indices with fractions and negative powers.

Algebra: Simplifying algebraic expressions by factorising and cancelling, solving quadratic equations by using the quadratic formula, completing the square or factorising, solve simultaneous equations involving quadratics and using graphs, equation of a circle, iteration, change the subject of an equation where the unknown appears twice and needs to be factorised, find the equation of a line given two points, transform graphs, find formula for direct and inverse proportion problems, drawing graphs of trigonometrical functions, exponential functions

Handling data: Histograms, cumulative frequency curves, box plots, gradient and area under distance-time graphs and speed-time graphs, Tree diagrams and conditional probability, solving capture and re-capture problems.

Geometrical reasoning: Vector proof, prove circle theorems, Pythagoras and trigonometry in 3D, sine and cosine rules, area of a triangle $\frac{1}{2} ab \sin C$, similar solids (LAV), and proof using congruency, circle theorems.