Maths

Curriculum Overview

The content is broken down into 5 areas.

Number – all aspects of number work including fractions and decimals – about 15% of the exam

Algebra – solving equations, graphs, proofs – about 30% of the exam

Ratio – proportion and rates of change – about 20% of the exam

Geometry – shapes, areas, angles, constructions – about 20% of the exam

Statistics – including probability – about 15% of the exam

About half of the marks in the exam will be for knowing and being able to use the facts and formulas, but the other half of the marks will be for being able to apply these in context to solve problems and then communicate these answer

Subject Specific Skills

The units below show how the material is divided over the two years of the course.

It details everything that students need to know

Strand	Higher	Foundation
Number	Calculations with decimals and integers BIDMAS Rounding (nearest integer, decimal places and significant figures) Indice laws (fractional and negative), roots and reciprocals Factors, multiples, primes, HCF, LCM Prime factor decomposition Standard form Surds Fractions Percentages – change, simple interest, compound interest, profit or loss, reverse percentages Bounds	Place value Positive and negative integers Rounding (nearest integer, decimal places and significant figures) Decimal calculations Indice laws (negative), powers and roots Factors, multiples, primes, HCF, LCM Prime factor decomposition Fractions Percentages – of an amount, change, profit or loss, simple interest, multiplier Multiplicative reasoning Best value Compound measures

	Multiplicative reasoning Best value Compound measures	Standard form
Algebra	Forming and Solving equations Rearranging Equations and Formulae Algebraic manipulation (expand, factorise, simplify, substitute) Quadratics (factorise, difference of 2 squares, quadratic formula, completing the square) Simultaneous Equations – linear and quadratic Algebraic Proof Sequences – linear, quadratic, geometric Graphs – real life, distance-time, velocity-time graphs, quadratic, cubic, exponential, reciprocal, circle Equation of a straight-line y=mx+c Parallel and perpendicular lines Coordinate geometry Inequalities – solving, drawing, graphing Expanding Binomials Sketching graphs – identifying roots, y intercept and the turning point Rationalise the denominator Algebraic fractions Functions – inverse and composite Graph transformations Area under a graph Gradient of non-linear graphs Interpretation of graphs	Writing expressions Forming and Solving equations Rearranging Equations and Formulae Algebraic manipulation (expand, factorise, simplify, substitute) Forming and Solving equations Inequalities – number line, solving Sequences – linear, quadratic, geometric Real life graphs – conversion graphs, bill graphs Linear and non-linear graphs Distance-time and speed-time graphs Straight line graphs Equation of a straight line y=mx+c Parallel and perpendicular lines Coordinate geometry Quadratic equations (factorising, difference of 2 squares, graphs) Simultaneous Equations Graphs – real life, distance-time, velocity-time graphs, quadratic, cubic, reciprocal
Ratio	1:n or n:1 Simplifying ratios Sharing ratios Direct proportion Inverse proportion Scales and measures Recipes	1:n or n:1 Simplifying ratios Sharing ratios Scales and measures Direct and indirect proportion Recipes Currency conversion Unitary method
Geometry	Angle facts – lines, triangles, quadrilaterals	Angle facts – lines, triangles, quadrilaterals

	Regular and irregular polygons Interior and exterior angles Parallel and perpendicular lines Pythagoras Trigonometry – SOHCAHTOA, exact values, Sine rule, Cosine rule, trigonometric graphs, Area of a triangle Bearings Perimeter Area including circles Surface Area Volume including cylinders, cones and spheres Transformations – reflections, rotations, translations, enlargements (negative and fractional) Constructions and Loci Scale drawings Similarity Congruence Circle Theorems Circle geometry Vectors Geometric proof	Parallel and perpendicular lines Interior and exterior angles Perimeter Area including compound and circles Surface area Volume Unit conversions Transformations – reflections, rotations, translations, enlargements Pythagoras Trigonometry – SOHCAHTOA, exact values Plans and Elevations Construction and Loci Scale drawings Bearings Parts of a circle Similarity Congruence Vectors
Statistics	Averages and range Data collection - discrete and continuous data Stem and leaf diagrams Frequency and grouped frequency tables Representing and interpreting data Bar charts, pie charts, frequency polygons, histograms, line graphs, time-series graphs Scatter graphs Probability Relative frequency, sample space diagrams, tree diagrams, venn diagrams, two-way tables Conditional Probability Experimental and theoretical probabilities Samples and population Bias Questionnaires Cumulative Frequency and Box Plots	Data collection - discrete and continuous data Representing and interpreting data Pictograms, Bar charts, pie charts, histograms, line graphs, time-series graphs, stem and leaf diagrams Scatter graphs Samples and population Bias Averages and range Probability Relative frequency, sample space diagrams, tree diagrams, venn diagrams, two-way tables Experimental and theoretical probabilities

Methods of Assessment and Exam Structure
GCSE Maths is assessed 100% through written examinations. This will consist of three 90 minute papers, the first of which will be without a calculator. The use of a calculator will be expected in the other 2 papers. The examination is constructed so that any topic area can be tested in any of the three papers and all three papers carry equal weighting.
The Maths Faculty
Mr G Nandra (Faculty Lead & Teaching Fellow) Mr A Cotgreave (Lead Practitioner for Maths) Miss G Ghatoara (KS3 Lead for Maths) Mr G Chand (KS5 Lead for Maths) Mrs R Vaid Mrs E Butler Mrs T Sehejpal If you have any questions please contact your son/daughter's maths teacher in the first instance, or Mr Nandra, for more general enquiries via general school number 0121 348 7660 Email: g.nandra@nishkamschools.org
How parents and carers can help
Parents and carers can help by talking about maths and encouraging confidence. Reminding their son/daughter that the ONLY way to revise for maths exams is by **DOING**. Reading notes has very limited value – you can't learn to drive by reading a book about cars, it's the same with maths. Students also need to have the full set of equipment. A scientific calculator as well as the 'tools of the trade' – pencil, ruler, pair of compasses and protractor are all essential. There are lots of resources available to help with revision. www.mymaths.co.uk is an online package to which everyone has access. It contains lessons and online tasks which are sometimes set for homework but which can be used at any time. Tasks are marked online and so give instant feedback. www.corbettmaths.com has a huge supply of exam style questions along with videos to help consolidate understanding. www.mathsgenie.co.uk also has a huge variety of resources.