

Dulwich College

13+ Syllabus Summary for Mathematics

The entrance paper examination consists of a 1½ hour written paper. Calculators are permitted for all questions. Candidates should be familiar with the entire Mathematics National curriculum for Key Stages 1-2 and most of Key Stage 3. Further clarification is provided below. The National Curriculum for Mathematics can be found [here](#).

The questions in the examination will assess if students are:

- fluent in the fundamental skills of Mathematics, especially in the topics detailed below
- able to reason mathematically
- able to solve problems by applying their mathematical knowledge to a variety of non-routine situations.

Some specific topics that may be tested are:

- Understanding of inequality notation
- Primes and prime factorisations, factors and multiples, including HCFs and LCMs
- Rounding to a given number of significant figures or decimal places
- Calculations involving decimals, fractions and percentages
- Working with ratios, including sharing amounts in a ratio
- Calculations and graphs involving speed, distance and time
- Algebraic manipulation, including multiplying out up to 2 brackets, single bracket factorisation and simple cancellations involving algebraic fractions
- Solving linear equations, as well as simple cases with fractions
- Work fluently with equations and graphs of the form $y = mx + c$ and $x = k$
- Spot patterns in numerical sequences, including finding the n^{th} term of an arithmetic sequence
- Line and rotational symmetry of shapes
- Areas and perimeters of circles and polygons, including triangles and quadrilaterals
- Surface areas and volumes of 3D prisms, including cylinders
- Transformations: reflections, translations, rotations and enlargements
- Pythagoras's Theorem
- Angle deductions from parallel lines and interior and exterior angles of polygons
- Plotting co-ordinates from a function to form a graph
- Simple probability calculations
- Mean, mode, median and range of a set of data
- Frequency tables, bar charts, line graphs, scatter graphs and pie charts.

The following topics will not be examinable.

- Solving quadratic equations, apart from ones of the form $ax^2 = b$
- Finding the n^{th} term of a quadratic sequence
- Use of trigonometric ratios, e.g. sine, cosine and tangent
- Standard form notation
- If a conversion between metric and imperial units is required, the conversion factors will be given and need not be memorized.

- Constructions using a compass and protractor.