

Equations & inequalities

- Systems of linear equations;
- Quadratic equations and inequalities;
- Exponential and logarithmic equation.

Functions

- Domain, range, inverse of a function, composition of functions;
- Transformations of functions;
- Linear functions;
- Quadratic functions;
- Exponential and logarithmic functions.

Sequences

- Arithmetic sequences: definition, n-th term, sum of the first n terms;
- Geometric sequences: definition, n-th term, sum of the first n terms;
- Application of sequences, including modelling population growth and finances.

Trigonometry

- Right angled trigonometry, including application to 3d shapes;
- Sine and cosine rule;
- Applications, including bearings and angles of elevation/depression.

Sets, Probability & Statistics

- Operations on sets: union, intersection, difference, complement;
- Venn diagrams;
- Basic definitions, including independent events and mutually exclusive events;
- Use of tables of outcomes, Venn diagrams and tree diagrams to solve probability problems;
- Conditional probability;
- Measures of central tendency and measures of dispersion;
- Bivariate statistics;
- Chi squared test for goodness of fit and for independence.

Vectors and Matrices

- Basic operations on vectors;
- Dot product of two vectors, angle between vectors;
- Geometrical proofs using vectors;
- Operations on matrices, including finding inverse of a 2x2 matrix;
- Applications of matrices to solving systems of equations and linear transformations.