

Mathematics Course Outline

Preliminary Section

- Curriculum matching chart
- Review of Junior Secondary Course
- Number and numeration
- Algebraic processes
- Geometry and mensuration
- Statistics and probability

Chapter 1: Indices and Logarithms

- Laws of indices
- Further laws of indices
- Standard form
- Logarithms
- Antilogarithms
- Calculations using logarithms

Chapter 2: Geometry — Triangles and Polygons

- Interior and exterior angles of triangles and polygons
- Congruent triangles
- Isosceles and equilateral triangles
- Parallelograms and related quadrilaterals
- Equal intercepts

Chapter 3: Fractions, Decimals, Percentages and Number Bases

- Fractions
- Decimals
- Percentage
- Number bases
- Binary system

Chapter 4: Simplification and Substitution

- Use of letters
- Simplification
- Adding and subtracting algebraic fractions
- Factorisation
- Difference of two squares

- Substitution

Chapter 5: Sets

- Sets
- Elements of a set
- Empty and infinite sets
- Subsets
- Union and intersection

Chapter 6: Equations and Formulae

- Equations
- Equations from word problems
- Substitution in formulae
- Change of subject of formula

Chapter 7: Linear and Quadratic Graphs

- Graphs of linear functions
- Graphs of quadratic functions

Chapter 8: Sets — Practical Applications

- Sets
- Complement of a set
- Set-builder notation
- Venn diagrams and problem solving

Chapter 9: Logical Reasoning

- Simple statements
- Compound statements
- Implication
- Conjunction and disjunction
- Equivalence and bi-implication

Chapter 10: Quadratic Equations

- Factorising quadratic expressions
- Quadratic equations
- Graphical solution of quadratic equations

Chapter 11: Trigonometry — Right-Angled Triangles

- Tangent, sine and cosine
- Pythagoras' theorem
- Angles of 45° , 60° and 30°
- Practical applications

Chapter 12: Mensuration — Plane Shapes

- Perimeter and area of common shapes
- Parallelograms and triangles between parallels
- Arcs, sectors and circles

Chapter 13: Ratio, Rate and Proportion

- Ratio
- Rate
- Proportional division

Chapter 14: Statistics — Data Presentation

- Frequency tables
- Bar charts and pie charts
- Grouped data
- Histogram
- Frequency polygon

Chapter 15: Mensuration — Solid Shapes

- Surface area and volume of common solids
- Addition and subtraction of volumes
- Frustum of cone and pyramid

Chapter 16: Geometry — Constructions and Locus

- Basic geometrical constructions
- Further constructions
- Locus
- Common loci
- Construction of loci

Chapter 17: Trigonometry — Angles Between 0° and 360°

- The general angle
- Trigonometrical ratios for $0^\circ \leq \theta \leq 360^\circ$
- Graphs of $\sin \theta$ and $\cos \theta$

Chapter 18: Variation

- Direct variation
- Inverse variation
- Joint variation
- Partial variation

Chapter 19: Tax and Monetary Exchange

- Income tax/PAYE
- Value Added Tax/VAT
- Monetary exchange

Chapter 20: Modular Arithmetic

- Cyclic events
- Modular arithmetic
- Addition and subtraction
- Multiplication and division

Supplementary Sections

- Revision exercises and tests
- Mensuration tables and formulae
- Symbols
- Four-figure tables
- Answers
- Index