

# Maths Content Map

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# International

## International Junior Algebra

- Patterns
  - Elementary (2 lessons)
    - Object and number patterns
  - Basic (6 lessons)
    - Identifying and describing patterns
    - Number sentences
  - Intermediate (3 lessons)
    - Identifying, describing and continuing patterns
- Algebra Skills
  - Elementary
    - Order of Operations (2 lessons)
    - Introduction to Algebra (5 lessons)
    - Substituting and Evaluating Algebraic Expressions (8 lessons)
    - Contextualising Algebra (2 lessons)
  - Basic
    - Expanding (3 lessons)
    - Factorising (4 lessons)
    - Simplifying (2 lessons)
    - Word Problems (2 lessons)
  - Intermediate
    - Simplifying and Evaluating Expressions (3 lessons)
    - Index Notations with Variables (6 lessons)
    - Expanding (4 lessons)
    - Factorising (6 lessons)
  - Advanced
    - Expanding and Factorising (11 lessons)
    - Algebraic Fractions (6 lessons)
    - Using Formulas and Solving Equations (3 lessons)
  - Extension (9 lessons)
    - Polynomials
    - The remainder and factor theorems
- Equations
  - Elementary (8 lessons)
    - Balancing Equations
    - Models and Flow charts
    - Solving Equations
  - Basic (3 lessons)
    - Order of Operations
  - Intermediate (5 lessons)
    - Rearranging Equations

- Solving using methods
    - Linear Equations
  - Advanced
    - Solving Linear Equations (5 lessons)
    - Solving Simultaneous Linear Equations (3 lessons)
    - Linear Inequalities (4 lessons)
    - Solving Quadrating Equations (9 lessons)
  - Extension
    - Quadratic Equations (6 lessons)
    - Exponential Equations (2 lessons)
- Graphs
  - Basic (6 lessons)
    - Plotting Linear relationship
    - Gradient and Equation of a line
    - Reading and Analysing Linear graphs
  - Intermediate
    - Coordinate Geometry (7 lessons)
      - Line Segment
      - Applications
    - Linear Graphs and Rules (10 lessons)
      - Features of Graphs
      - Plotting Linear Graphs
      - Linear Patterns and Rules
      - Travel Graphs
  - Advanced
    - Parallel and Perpendicular Lines (2 lessons)
    - Non-Linear Graphs (7 lessons)
      - Parabolas
      - Circles
      - Exponential Graphs
  - Extension
    - Polynomial Graphs (8 lessons)
      - Features of Graphs
      - Parabolas
      - Cubics
      - Quartics
    - Non-Polynomial Graphs (8 lessons)
      - Non-Polynomial Graphs
      - Functions

## International Junior Geometry

- 2D Shapes
  - Basic (4 lessons)

- Rectangles and Triangles
    - Composite Shapes
  - Intermediate (3 lessons)
    - Polygons
- 3D Objects
  - Intermediate (4 lessons)
    - Prisms and Pyramids
    - Solids
  - Advanced (2 lessons)
- Representing 3D Shapes
  - Basic (2 lessons)
    - Drawing Prisms and Pyramids
  - Intermediate (5 lessons)
    - Nets
- Geometric Reasoning
  - Elementary (1 lesson)
    - Angles
  - Basic (7 lessons)
    - Angles
  - Intermediate
    - Shapes (9 lessons)
      - Angles in a Shape
      - Interior and Exterior Angles
    - Parallel Lines (2 lessons)
  - Advanced
    - Congruence (9 lessons)
      - Conditions for Congruence
    - Similarity (6 lessons)
      - Using Similar Triangles
      - Similarity Tests
    - Proofs (6 lessons)
  - Extension
    - Angle Theorems for Circles (6 lessons)
    - Chord Properties of Circles (4 lessons)
- Pythagoras and Trigonometry
  - Intermediate (2 lessons)
  - Advanced
    - Trigonometry (3 lessons)
    - Bearings and Elevation (2 lessons)
  - Extension
    - Trigonometric Rules (5 lessons)
    - Area of a Triangle (2 lessons)
    - Special Triangles (3 lessons)
    - 3D Pythagoras and Trigonometry (3 lessons)

- Graphing Trigonometric Functions (5 lessons)
- Position and Orientations
  - Elementary (1 lesson)
    - Describing Locations
  - Basic (3 lessons)
    - Using Compasses, Scales and Landmarks
  - Intermediate (3 lessons)
    - Cartesian Planes
- Transformation and Symmetry
  - Elementary (5 lessons)
    - Transforming Shapes
    - Symmetry in Life
  - Basic (12 lessons)
    - Translation
    - Rotation
    - Reflection
    - Magnitude
  - Intermediate (4 lessons)
    - Predicting Patterns
  - Advanced (3 lessons)
    - Multiple Transformations
    - Symmetry of 3D Objects

#### International Junior Measurement

- Units and Taking Measurements
  - Units and Systems of Measurement
    - Elementary (2 lessons)
    - Intermediate (1 lesson)
  - Linear Measure
    - Basic (1 lesson)
    - Intermediate (2 lessons)
    - Advanced (4 lessons)
  - Area
    - Elementary (1 lesson)
    - Basic (1 lesson)
    - Intermediate (1 lesson)
    - Advanced (2 lessons)
  - Volume and Capacity
    - Basic (1 lesson)
    - Intermediate (3 lessons)
    - Advanced (4 lessons)
  - Time
    - Elementary (4 lessons)
      - Language

- Analog Clocks
  - Basic (4 lessons)
    - Recording Time
    - 24-Hour Time
  - Intermediate (2 lessons)
    - Converting Time
  - Advanced (3 lessons)
    - Scientific Notation
    - Time Zones
- Mass
  - Intermediate (1 lesson)
  - Advanced (5 lessons)
- Length and Perimeter
  - Elementary (1 lesson)
  - Basic (3 lessons)
  - Intermediate (6 lessons)
    - Unknown Sides
    - Circles
  - Extension (1 lesson)
- Area and Surface Area
  - Basic (2 lessons)
  - Intermediate (7 lessons)
    - Calculating the Area
  - Advanced (9 lessons)
    - Surface Area
  - Extension (1 lesson)
- Volume and Capacity
  - Basic (2 lessons)
  - Intermediate (4 lessons)
  - Advanced (4 lessons)

#### International Junior Number

- Number and Place Value
  - Elementary (5 lessons)
  - Intermediate (1 lesson)
  - Advanced
    - Associative, Commutative and Distributive Laws (4 lessons)
    - Classifying Numbers (8 lessons)
- Addition and Subtraction
  - Elementary (5 lessons)
  - Basic (3 lessons)
- Multiplication and Division
  - Basic (7 lessons)

- Multiples and Division
    - Factors
  - Intermediate (4 lessons)
  - Advanced (11 lessons)
    - Factors and Multiples
    - Prime Numbers and Prime Factors
    - Long Division
- Powers and Roots
  - Basic (3 lessons)
  - Advanced (8 lessons)
    - Indices
    - Index Laws
  - Extension
    - Surds (8 lessons)
    - Logarithms (5 lessons)
- Integers
  - Basic (6 lessons)
    - Positive and Negative Integers
  - Intermediate (4 lessons)
  - Advanced (7 lessons)
- Scientific Notation (2 lessons)
- Fractions, Percentages and Decimals
  - Fractions
    - Elementary (2 lessons)
    - Basic (13 lessons)
      - Adding and Subtracting Fractions
    - Intermediate
      - Comparing Fractions (9 lessons)
      - Adding and Subtracting Fractions (6 lessons)
    - Advanced
      - Introduction to Fractions (5 lessons)
      - Adding Fractions (3 lessons)
      - Subtracting Fractions (4 lessons)
      - Multiplying and Dividing Fractions (4 lessons)
      - Comparing and Using Fractions (5 lessons)
  - Decimals
    - Elementary (5 lessons)
    - Basic
      - Adding and Subtracting Decimals (6 lessons)
      - Multiplying and Dividing Decimals (2 lessons)
    - Intermediate (6 lessons)
    - Advanced (3 lessons)
  - Percentages
    - Basic (2 lessons)

- Intermediate (4 lessons)
  - Converting Between Fractions, Decimals and Percentages
    - Basic (2 lessons)
    - Intermediate (2 lessons)
- Proportion
  - Ratios (1 lesson)
  - Rates (6 lessons)
  - Proportion (5 lessons)
- Money and Financial Mathematics
  - Elementary (7 lessons)
    - Money
    - Counting Change
  - Intermediate
    - Income and Tax (4 lessons)
    - Simple Interest (4 lessons)
  - Advanced (4 lessons)
    - Compound Interest

#### International Junior Probability

- Introduction to Probability
  - Elementary (3 lessons)
  - Basic (6 lessons)
    - Likelihood of Events
    - Probability of Outcomes
  - Intermediate (4 lessons)
  - Advanced (9 lessons)
    - Calculating a Probability
- Probability Concepts
  - Complementary Events (2 lessons)
  - Conditional Probability (6 lessons)
  - Independence (2 lessons)
- Displaying Probabilities
  - Tree Diagrams
    - Intermediate (5 lessons)
    - Advanced (6 lessons)
  - Tables and Venn Diagrams
    - Intermediate (8 lessons)
    - Advanced (5 lessons)
- Experimental Probability
  - Relative Frequencies (2 lessons)
  - Sampling (7 lessons)

#### International Junior Statistics

- Bivariate Data





- Intermediate (5 lessons)
  - Bivariate data (incl. Time Series).
  - Scatter Plots
- Advanced (6 lessons)
  - Lines of Best Fit
- Data Collection and Reports
  - Elementary (3 lessons)
  - Basic (5 lessons)
  - Intermediate
    - Data Sources (2 lessons)
    - Collecting Data (3 lessons)
  - Advanced (4 lessons)
  - Extension (7 lessons)
- Data Displays
  - Elementary (11 lessons)
  - Basic (10 lessons)
  - Intermediate (9 lessons)
  - Advanced (4 lessons)
- Single Variable
  - Elementary (6 lessons)
    - Measures of Centre and Spread
  - Basic (5 lessons)
    - Frequency Tables
  - Intermediate (6 lessons)
  - Advanced (8 lessons)
    - Five Point Summary
    - Box and Whisker Plots
  - Extension (6 lessons)
    - Standard Deviation

## International Senior Algebra

- Algebraic Skills
  - Simplifying Algebraic Expressions (3 lessons)
  - Expanding and Factorising
    - Expanding (2 lessons)
    - Factorising (4 lessons)
  - Algebraic Fractions (4 lessons)
  - Rearranging Formulae (2 lessons)
- Equations
  - Linear Equations (3 lessons)
  - Quadratic Equations (9 lessons)
  - Exponential Equations (2 lessons)
  - Inequations (3 lessons)

- Rational and Irrational Equations (2 lessons)
- Polynomial Equations (9 lessons)
- Exponents and Logarithms
  - Exponents (5 lessons)
  - Logarithms (5 lessons)
- Systems of Equations (10 lessons)
- Sequence and Series (18 lessons)
  - Arithmetic Sequences
  - Geometric Sequences
  - Recursive Sequences
- Complex Numbers (12 lessons)

#### International Senior Calculus

- Differentiation
  - Introduction to Derivatives (4 lessons)
  - Differentiating Polynomials (6 lessons)
  - Tangents and Normals (5 lessons)
  - Stationary Points (4 lessons)
  - Applications (4 lessons)
  - Properties of Functions (1 lesson)
  - Differentiation Techniques (12 lessons)
- Integration
  - Introducing Integration (4 lessons)
  - Area Under Curves (9 lessons)
  - Integration Techniques (12 lessons)
  - Differential Equations (7 lessons)
  - Applications (3 lessons)

#### International Senior Functions and Graphs

- Linear Relationships (6 lessons)
- Coordinate Geometry Skills (12 lessons)
- Quadratics Relationships (6 lessons)
- Polynomial Relationships (8 lessons)
- Non-Polynomial Graphs
  - Exponential Equations (5 lessons)
  - Circles and Hyperbola (3 lessons)
  - Piecewise and Step Graphs (4 lessons)
- Simultaneous Equations (10 lessons)
- Functions (3 lessons)

#### International Senior Geometry

- Geometric Reasoning
  - Angle Laws (10 lessons)
  - Angle Theorems for Circles (6 lessons)

- Chord Properties (4 lessons)
- Circle Measure (3 lessons)
- Bearings (1 lesson)
- Pythagoras and Trigonometry
  - Pythagoras' Theorem (2 lessons)
  - Trigonometric Ratios (5 lessons)
  - Trigonometric Rules (5 lessons)
  - Area of a Triangle (2 lessons)
  - Solving Simple Trigonometric Equations (3 lessons)
  - Defining and Graphing Trigonometric Functions (5 lessons)
- Networks (6 lessons)

#### International Senior Linear Algebra

- Matrices
  - Matrix Fundamentals (3 lessons)
  - Matrix Products (2 lessons)
  - Writing Information as a Matrix (2 lessons)
  - Matrix Equations (3 lessons)
  - Transition Matrices (5 lessons)

#### International Senior Measurement

- Metric Units (5 lessons)
- Perimeter (3 lessons)
- Area (3 lessons)
- Surface Area (6 lessons)
- Volume (6 lessons)

#### International Senior Number

- Fractions (3 lessons)
- Decimals (4 lessons)
- Percentages (8 lessons)
- Ratios (5 lessons)
- Rational and Irrational Numbers (1 lesson)
- Surds (8 lessons)

#### International Senior Statistics and Probability

- Probability Concepts (9 lessons)
- Displaying Data (11 lessons)
- Probability Distributions (16 lessons)
  - Binomial and Poisson Distributions
  - Normal Distribution
  - Standard Deviation
- Statistics
  - Sampling and Reports (7 lessons)

- Evaluate Statistical Reports
  - Introduction to Sampling (4 lessons)
  - Evaluating Single Samples (5 lessons)
  - Comparison Within Samples (5 lessons)
  - Comparison Between Samples (5 lessons)
  - Identifying the Evaluation Method (1 lesson)
  - Non-Sampling Errors (3 lessons)
- Upper Secondary
  - Inference (12 lessons)
  - Interpreting Data and Evaluating Investigations (1 lesson)

# Cambridge

## Cambridge Year 7 Mathematics

- Number
  - Arithmetic (7 lessons)
  - Multiples, Factors and Primes (6 lessons)
  - Powers and Roots (3 lessons)
  - Negative Numbers (6 lessons)
  - Fractions (17 lessons)
  - Decimals (15 lessons)
  - Percentages (6 lessons)
  - Ratios, Rates and Proportions (5 lessons)
- Algebra
  - Expressions, equations and formulae (17 lessons)
  - Sequences, functions and graphs (14 lessons)
- Geometry
  - 2D shapes (6 lessons)
  - 3D solids (6 lessons)
  - Geometric reasoning (9 lessons)
  - Angles in triangles and quadrilaterals (3 lessons)
  - Geometric proofs: angles (2 lessons)
  - Symmetry (6 lessons)
  - Describing position (3 lessons)
- Measure
  - Introduction to Units (1 lesson)
  - Units of length (5 lessons)
  - Units of mass (5 lessons)
  - Units of capacity (5 lessons)
  - Measuring time (10 lessons)
  - Timetables (5 lessons)
  - Perimeter of rectangles (3 lessons)
  - Area of rectangles (2 lessons)
  - Volume of cuboids (2 lessons)
- Handling Data
  - Planning and collecting data (5 lessons)
  - Processing data (6 lessons)
  - Presenting data (6 lessons)
  - Interpreting and discussing results (6 lessons)
  - Probability (9 lessons)

## Cambridge Year 8 Mathematics

- Number
  - Arithmetic (4 lessons)

- Negative numbers (1 lesson)
- Multiples, factors and primes (5 lessons)
- Fractions (10 lessons)
- Percentages (8 lessons)
- Algebra
  - Expressions, equations and formulae (17 lessons)
  - Sequences, functions and graphs (8 lessons)
- Geometry
  - Introduction to congruence (3 lessons)
  - Parallel lines (2 lessons)
  - Geometric proofs (2 lessons)
  - Representing 3D objects (5 lessons)
  - Polyhedra (3 lessons)
  - Transformations and scaling (14 lessons)
- Measure
  - Units of volume and capacity (3 lessons)
  - Circle measurements (7 lessons)
  - Perimeter of triangles and quadrilaterals (3 lessons)
  - Area of triangles and quadrilaterals (5 lessons)
- Handling Data
  - Planning and collecting data (5 lessons)
  - Processing and presenting data (2 lessons)
  - Interpreting and discussing results (4 lessons)
  - Complementary events (2 lessons)
  - Two-step experiments (3 lessons)

### Cambridge Year 9 Mathematics

- Number
  - Arithmetic (12 lessons)
  - Powers and roots (23 lessons)
  - Fractions (5 lessons)
  - Rounding decimals (1 lesson)
  - Percentages (12 lessons)
  - Proportions (1 lesson)
- Algebra
  - Expressions, equations and formulae (33 lessons)
  - Sequences, functions and graphs (14 lessons)
- Geometry
  - Interior and exterior angles (3 lessons)
  - Proving congruence (7 lessons)
  - Pythagoras' theorem (3 lessons)
  - Tessellations (1 lesson)
  - Mixed transformations (2 lessons)
  - Scale drawings and maps (4 lessons)

- Measure
  - Converting units of area and volume (4 lessons)
  - Surface area of prisms and cylinders (4 lessons)
  - Volume of prisms and cylinders (4 lessons)
- Handling data
  - Planning and collecting data (1 lesson)
  - Processing and presenting data (6 lessons)
  - Interpreting and discussing results (2 lessons)
  - Probability (4 lessons)

#### Cambridge Key Stage 4

- Number
  - Using real numbers (21 lessons)
  - Powers and roots (17 lessons)
  - Fractions (14 lessons)
  - Decimals (4 lessons)
  - Scientific notation (2 lessons)
  - Ratio and proportion (5 lessons)
  - Percentages (10 lessons)
  - Time (10 lessons)
  - Finance (17 lessons)
- Algebra and Graphs
  - Algebra skills (51 lessons)
  - Solving equations (36 lessons)
  - Linear programming (4 lessons)
  - Patterns (14 lessons)
  - Proportions (3 lessons)
  - Functions (9 lessons)
  - Graphs (40 lessons)
  - Gradients and differentiation (7 lessons)
- Coordinate Geometry
  - Introduction to graphs (3 lessons)
  - Gradient and equation of a straight line (2 lessons)
  - Line segments (4 lessons)
  - Applications of coordinate geometry (3 lessons)
  - Parallel and perpendicular lines (4 lessons)
- Geometry
  - 2D shapes (8 lessons)
  - 3D objects (16 lessons)
  - Similarity (4 lessons)
  - Congruence (7 lessons)
  - Symmetry (10 lessons)
  - Angles and angle properties (9 lessons)
  - Angles in shapes (5 lessons)

- Parallel lines and angles (2 lessons)
- Geometric proofs (6 lessons)
- Angle theorems for circles (6 lessons)
- Mensuration
  - Units and conversions (28 lessons)
  - Area and perimeter (12 lessons)
  - Circle measurements (7 lessons)
  - Surface area (9 lessons)
  - Volume of cuboids (2 lessons)
  - Volume of prisms and cylinders (3 lessons)
  - Volume of pyramids, cones and spheres (4 lessons)
- Trigonometry
  - Pythagoras' Theorem (3 lessons)
  - Trigonometry (7 lessons)
  - Bearings and elevation (2 lessons)
  - Trigonometric rules (6 lessons)
  - Area of a triangle (2 lessons)
  - Special triangles (3 lessons)
  - Trigonometry and the unit circle (5 lessons)
- Vectors and Transformations
  - Translation (3 lessons)
  - Reflection (3 lessons)
  - Rotation (3 lessons)
  - Scaling (5 lessons)
  - Mixed transformations (2 lessons)
- Probability
  - Probability concepts (6 lessons)
  - Complementary events (2 lessons)
  - Relative frequencies (4 lessons)
  - Combined events (17 lessons)
  - Conditional probability (6 lessons)
- Statistics
  - Types of data (4 lessons)
  - Data gathering (8 lessons)
  - Mean, median and mode (6 lessons)
  - Displaying data (7 lessons)
  - Box and whisker plots (8 lessons)
  - Scatter diagrams (5 lessons)
  - Lines of best fit (6 lessons)

#### A Levels (Supporting Resources)

- Algebra
  - Algebraic skills (16 lessons)
  - Equations (19 lessons)



- Polynomial equations (9 lessons)
- Exponents and logarithms (10 lessons)
- Sequences and series (19 lessons)
- Complex numbers (12 lessons)
- Extended questions (7 lessons)
- Calculus
  - Differentiation (41 lessons)
  - Integration (36 lessons)
- Functions and Graphs
  - Linear relationships (6 lessons)
  - Coordinate geometry skills (12 lessons)
  - Quadratic relationships (6 lessons)
  - Polynomial relationships (8 lessons)
  - Non-polynomial graphs (12 lessons)
  - Simultaneous equations (10 lessons)
  - Functions (3 lessons)
  - Extended investigations (9 lessons)
- Geometry
  - Geometric reasoning (21 lessons)
  - Pythagoras and trigonometry (29 lessons)
  - Networks (6 lessons)
- Measurement
  - Metric units (5 lessons)
  - Perimeter (3 lessons)
  - Area (3 lessons)
  - Surface area (6 lessons)
  - Volume (6 lessons)
- Number
  - Fractions (3 lessons)
  - Decimals (4 lessons)
  - Percentages (8 lessons)
  - Ratios (5 lessons)
  - Rational and irrational numbers (1 lesson)
  - Surds (8 lessons)
  - Integrated applications (14 lessons)
- Statistics and Probability
  - Probability concepts (9 lessons)
  - Displaying data (11 lessons)
  - Probability distributions (16 lessons)
  - Statistics (33 lessons)

# UK Curriculum

## Key Stage 3: Algebra

- Patterns
  - Elementary (2 lessons)
    - Object and number patterns
  - Basic (6 lessons)
    - Identifying and describing patterns
    - Number sentences
  - Intermediate (3 lessons)
    - Identifying, describing and continuing patterns
- Algebra Skills
  - Elementary
    - Order of Operations (2 lessons)
    - Introduction to Algebra (5 lessons)
    - Substituting and Evaluating Algebraic Expressions (8 lessons)
    - Contextualising Algebra (2 lessons)
  - Basic
    - Expanding (3 lessons)
    - Factorising (4 lessons)
    - Simplifying (2 lessons)
    - Word Problems (2 lessons)
  - Intermediate
    - Simplifying and Evaluating Expressions (3 lessons)
    - Index Notations with Variables (6 lessons)
    - Expanding (4 lessons)
    - Factorising (6 lessons)
  - Advanced
    - Expanding and Factorising (11 lessons)
    - Algebraic Fractions (6 lessons)
    - Using Formulas and Solving Equations (3 lessons)
  - Extension (9 lessons)
    - Polynomials
    - The remainder and factor theorems
- Equations
  - Elementary (8 lessons)
    - Balancing Equations
    - Models and Flow charts
    - Solving Equations
  - Basic (3 lessons)
    - Order of Operations
  - Intermediate (5 lessons)

- Rearranging Equations
    - Solving using methods
    - Linear Equations
  - Advanced
    - Solving Linear Equations (5 lessons)
    - Solving Simultaneous Linear Equations (3 lessons)
    - Linear Inequalities (4 lessons)
    - Solving Quadrating Equations (9 lessons)
  - Extension
    - Quadratic Equations (6 lessons)
    - Exponential Equations (2 lessons)
- Graphs
  - Basic (6 lessons)
    - Plotting Linear relationship
    - Gradient and Equation of a line
    - Reading and Analysing Linear graphs
  - Intermediate
    - Coordinate Geometry (7 lessons)
      - Line Segment
      - Applications
    - Linear Graphs and Rules (10 lessons)
      - Features of Graphs
      - Plotting Linear Graphs
      - Linear Patterns and Rules
      - Travel Graphs
  - Advanced
    - Parallel and Perpendicular Lines (2 lessons)
    - Non-Linear Graphs (7 lessons)
      - Parabolas
      - Circles
      - Exponential Graphs
  - Extension
    - Polynomial Graphs (8 lessons)
      - Features of Graphs
      - Parabolas
      - Cubics
      - Quartics
    - Non-Polynomial Graphs (8 lessons)
      - Non-Polynomial Graphs
      - Functions

### Key Stage 3: Geometry

- 2D Shapes

- Basic (4 lessons)
  - Rectangles and Triangles
  - Composite Shapes
- Intermediate (3 lessons)
  - Polygons
- 3D Objects
  - Intermediate (4 lessons)
    - Prisms and Pyramids
    - Solids
  - Advanced (2 lessons)
- Representing 3D Shapes
  - Basic (2 lessons)
    - Drawing Prisms and Pyramids
  - Intermediate (5 lessons)
    - Nets
- Geometric Reasoning
  - Elementary (1 lesson)
    - Angles
  - Basic (7 lessons)
    - Angles
  - Intermediate
    - Shapes (9 lessons)
      - Angles in a Shape
      - Interior and Exterior Angles
    - Parallel Lines (2 lessons)
  - Advanced
    - Congruence (9 lessons)
      - Conditions for Congruence
    - Similarity (6 lessons)
      - Using Similar Triangles
      - Similarity Tests
    - Proofs (6 lessons)
  - Extension
    - Angle Theorems for Circles (6 lessons)
    - Chord Properties of Circles (4 lessons)
- Pythagoras and Trigonometry
  - Intermediate (2 lessons)
  - Advanced
    - Trigonometry (3 lessons)
    - Bearings and Elevation (2 lessons)
  - Extension
    - Trigonometric Rules (5 lessons)
    - Area of a Triangle (2 lessons)
    - Special Triangles (3 lessons)

- 3D Pythagoras and Trigonometry (3 lessons)
    - Graphing Trigonometric Functions (5 lessons)
- Position and Orientations
  - Elementary (1 lesson)
    - Describing Locations
  - Basic (3 lessons)
    - Using Compasses, Scales and Landmarks
  - Intermediate (3 lessons)
    - Cartesian Planes
- Transformation and Symmetry
  - Elementary (5 lessons)
    - Transforming Shapes
    - Symmetry in Life
  - Basic (12 lessons)
    - Translation
    - Rotation
    - Reflection
    - Magnitude
  - Intermediate (4 lessons)
    - Predicting Patterns
  - Advanced (3 lessons)
    - Multiple Transformations
    - Symmetry of 3D Objects

### Key Stage 3: Measurement

- Units and Taking Measurements
  - Units and Systems of Measurement
    - Elementary (2 lessons)
    - Intermediate (1 lesson)
  - Linear Measure
    - Basic (1 lesson)
    - Intermediate (2 lessons)
    - Advanced (4 lessons)
  - Area
    - Elementary (1 lesson)
    - Basic (1 lesson)
    - Intermediate (1 lesson)
    - Advanced (2 lessons)
  - Volume and Capacity
    - Basic (1 lesson)
    - Intermediate (3 lessons)
    - Advanced (4 lessons)
  - Time

- Elementary (4 lessons)
      - Language
      - Analog Clocks
    - Basic (4 lessons)
      - Recording Time
      - 24-Hour Time
    - Intermediate (2 lessons)
      - Converting Time
    - Advanced (3 lessons)
      - Scientific Notation
      - Time Zones
  - Mass
    - Intermediate (1 lesson)
    - Advanced (5 lessons)
- Length and Perimeter
  - Elementary (1 lesson)
  - Basic (3 lessons)
  - Intermediate (6 lessons)
    - Unknown Sides
    - Circles
  - Extension (1 lesson)
- Area and Surface Area
  - Basic (2 lessons)
  - Intermediate (7 lessons)
    - Calculating the Area
  - Advanced (9 lessons)
    - Surface Area
  - Extension (1 lesson)
- Volume and Capacity
  - Basic (2 lessons)
  - Intermediate (4 lessons)
  - Advanced (4 lessons)

### Key Stage 3: Number

- Number and Place Value
  - Elementary (5 lessons)
  - Intermediate (1 lesson)
  - Advanced
    - Associative, Commutative and Distributive Laws (4 lessons)
    - Classifying Numbers (8 lessons)
- Addition and Subtraction
  - Elementary (5 lessons)
  - Basic (3 lessons)

- Multiplication and Division
  - Basic (7 lessons)
    - Multiples and Division
    - Factors
  - Intermediate (4 lessons)
  - Advanced (11 lessons)
    - Factors and Multiples
    - Prime Numbers and Prime Factors
    - Long Division
- Powers and Roots
  - Basic (3 lessons)
  - Advanced (8 lessons)
    - Indices
    - Index Laws
  - Extension
    - Surds (8 lessons)
    - Logarithms (5 lessons)
- Integers
  - Basic (6 lessons)
    - Positive and Negative Integers
  - Intermediate (4 lessons)
  - Advanced (7 lessons)
- Scientific Notation (2 lessons)
- Fractions, Percentages and Decimals
  - Fractions
    - Elementary (2 lessons)
    - Basic (13 lessons)
      - Adding and Subtracting Fractions
    - Intermediate
      - Comparing Fractions (9 lessons)
      - Adding and Subtracting Fractions (6 lessons)
    - Advanced
      - Introduction to Fractions (5 lessons)
      - Adding Fractions (3 lessons)
      - Subtracting Fractions (4 lessons)
      - Multiplying and Dividing Fractions (4 lessons)
      - Comparing and Using Fractions (5 lessons)
  - Decimals
    - Elementary (5 lessons)
    - Basic
      - Adding and Subtracting Decimals (6 lessons)
      - Multiplying and Dividing Decimals (2 lessons)
    - Intermediate (6 lessons)
    - Advanced (3 lessons)

- Percentages
  - Basic (2 lessons)
  - Intermediate (4 lessons)
- Converting Between Fractions, Decimals and Percentages
  - Basic (2 lessons)
  - Intermediate (2 lessons)
- Proportion
  - Ratios (1 lesson)
  - Rates (6 lessons)
  - Proportion (5 lessons)
- Money and Financial Mathematics
  - Elementary (7 lessons)
    - Money
    - Counting Change
  - Intermediate
    - Income and Tax (4 lessons)
    - Simple Interest (4 lessons)
  - Advanced (4 lessons)
    - Compound Interest

### Key Stage 3: Probability

- Introduction to Probability
  - Elementary (3 lessons)
  - Basic (6 lessons)
    - Likelihood of Events
    - Probability of Outcomes
  - Intermediate (4 lessons)
  - Advanced (9 lessons)
    - Calculating a Probability
- Probability Concepts
  - Complementary Events (2 lessons)
  - Conditional Probability (6 lessons)
  - Independence (2 lessons)
- Displaying Probabilities
  - Tree Diagrams
    - Intermediate (5 lessons)
    - Advanced (6 lessons)
  - Tables and Venn Diagrams
    - Intermediate (8 lessons)
    - Advanced (5 lessons)
- Experimental Probability
  - Relative Frequencies (2 lessons)
  - Sampling (7 lessons)



## Key Stage 3: Statistics

- Bivariate Data
  - Intermediate (5 lessons)
    - Bivariate data (incl. Time Series).
    - Scatter Plots
  - Advanced (6 lessons)
    - Lines of Best Fit
- Data Collection and Reports
  - Elementary (3 lessons)
  - Basic (5 lessons)
  - Intermediate
    - Data Sources (2 lessons)
    - Collecting Data (3 lessons)
  - Advanced (4 lessons)
  - Extension (7 lessons)
- Data Displays
  - Elementary (11 lessons)
  - Basic (10 lessons)
  - Intermediate (9 lessons)
  - Advanced (4 lessons)
- Single Variable
  - Elementary (6 lessons)
    - Measures of Centre and Spread
  - Basic (5 lessons)
    - Frequency Tables
  - Intermediate (6 lessons)
  - Advanced (8 lessons)
    - Five Point Summary
    - Box and Whisker Plots
  - Extension (6 lessons)
    - Standard Deviation

## Senior Algebra

- Algebraic Skills
  - Simplifying Algebraic Expressions (3 lessons)
  - Expanding and Factorising
    - Expanding (2 lessons)
    - Factorising (4 lessons)
  - Algebraic Fractions (4 lessons)
  - Rearranging Formulae (2 lessons)
- Equations

- Linear Equations (3 lessons)
- Quadratic Equations (9 lessons)
- Exponential Equations (2 lessons)
- Inequations (3 lessons)
- Rational and Irrational Equations (2 lessons)
- Polynomial Equations (9 lessons)
- Exponents and Logarithms
  - Exponents (5 lessons)
  - Logarithms (5 lessons)
- Systems of Equations (10 lessons)
- Sequence and Series (18 lessons)
  - Arithmetic Sequences
  - Geometric Sequences
  - Recursive Sequences
- Complex Numbers (12 lessons)

### Senior Calculus

- Differentiation
  - Introduction to Derivatives (4 lessons)
  - Differentiating Polynomials (6 lessons)
  - Tangents and Normals (5 lessons)
  - Stationary Points (4 lessons)
  - Applications (4 lessons)
  - Properties of Functions (1 lesson)
  - Differentiation Techniques (12 lessons)
- Integration
  - Introducing Integration (4 lessons)
  - Area Under Curves (9 lessons)
  - Integration Techniques (12 lessons)
  - Differential Equations (7 lessons)
  - Applications (3 lessons)

### Senior Functions and Graphs

- Linear Relationships (6 lessons)
- Coordinate Geometry Skills (12 lessons)
- Quadratics Relationships (6 lessons)
- Polynomial Relationships (8 lessons)
- Non-Polynomial Graphs
  - Exponential Equations (5 lessons)
  - Circles and Hyperbola (3 lessons)
  - Piecewise and Step Graphs (4 lessons)
- Simultaneous Equations (10 lessons)

- Functions (3 lessons)

## Senior Geometry

- Geometric Reasoning
  - Angle Laws (10 lessons)
  - Angle Theorems for Circles (6 lessons)
  - Chord Properties (4 lessons)
  - Circle Measure (3 lessons)
  - Bearings (1 lesson)
- Pythagoras and Trigonometry
  - Pythagoras' Theorem (2 lessons)
  - Trigonometric Ratios (5 lessons)
  - Trigonometric Rules (5 lessons)
  - Area of a Triangle (2 lessons)
  - Solving Simple Trigonometric Equations (3 lessons)
  - Defining and Graphing Trigonometric Functions (5 lessons)
- Networks (6 lessons)

## Senior Measurement

- Metric Units (5 lessons)
- Perimeter (3 lessons)
- Area (3 lessons)
- Surface Area (6 lessons)
- Volume (6 lessons)

## Senior Number

- Fractions (3 lessons)
- Decimals (4 lessons)
- Percentages (8 lessons)
- Ratios (5 lessons)
- Rational and Irrational Numbers (1 lesson)
- Surds (8 lessons)

## Senior Statistics and Probability

- Probability Concepts (9 lessons)
- Displaying Data (11 lessons)
- Probability Distributions (16 lessons)
  - Binomial and Poisson Distributions
  - Normal Distribution
  - Standard Deviation

- Statistics
  - Sampling and Reports (7 lessons)
  - Evaluate Statistical Reports
    - Introduction to Sampling (4 lessons)
    - Evaluating Single Samples (5 lessons)
    - Comparison Within Samples (5 lessons)
    - Comparison Between Samples (5 lessons)
    - Identifying the Evaluation Method (1 lesson)
    - Non-Sampling Errors (3 lessons)
  - Upper Secondary
    - Inference (12 lessons)
    - Interpreting Data and Evaluating Investigations (1 lesson)

# Common Core

## Grade K-4

- Counting and Cardinality (4 lessons)
  - Number Names and the Count Sequence
  - Counting and Comparing Numbers
- Operations and Algebraic Thinking (32 lessons)
  - Addition and Subtraction
  - Skip Counting
  - Introduction to Multiplication and Division
  - Multiplication and Division
  - Properties of Multiplication
  - Multiples and Factors
  - Prime Numbers
  - Generate and Analyse Patterns
- Number and Operations in Base Ten (13 lessons)
  - Introduction to Place Value
  - Addition and Subtraction
  - Multiplication and Division
- Number and Operations—Fractions (17 lessons)
  - Common Fractions
  - Introduction to Fractions
  - Ordering and Comparing Fractions
  - Equivalent Fractions
  - Adding and Subtract Fractions with the Same Denominator
  - Decimal Notation and Fractions
- Measurement and Data (67 lessons)
  - Subtraction Using Number Lines
  - Money
  - Introduction to Angles
  - Data Displays
  - Units and Systems of Measurement
  - Units of Length
  - Units of Mass
  - Capacity
  - Time
  - Units of Area
  - Perimeter of Rectangles
  - Perimeter of Quadrilaterals
  - Area of Rectangles
- Geometry (18 lessons)
  - Basic Shapes
  - Classifying Shapes

- Classifying Three-Dimensional Solids
- Types of Angles
- Line Symmetry

#### Grade 5

- 5.G Geometry (6 lessons)
  - The Coordinate Plane
  - Coordinates and Location
- 5.MD Measurement and Data (9 lessons)
  - Unit of Area
  - Units of Volume
  - Volume of Cuboids
- 5.NBT Number and Operations in Base 10 (21 lessons)
  - The Place Value System
  - Operations with Whole Numbers and Decimals
  - Adding and Subtracting Decimals
  - Application of Decimals: Budgeting
- 5.NF Number and Operations—Fractions (16 lessons)
  - Adding and Subtracting Fractions
  - Multiplying Fractions
  - Fractions of an Amount
  - Comparing Fractions as Decimals
  - Mixed Applications of Fractions
- 5.OA Operations and Algebraic Thinking (8 lessons)
  - Interpret Numerical Expressions
  - Analyze Pattern and Relationships

#### Grade 6

- 6.EE Expressions and Equations (53 lessons)
  - Pre-Algebra (Number Sentences)
  - Introduction to Variables
  - Simplifying Like Terms
  - Simplifying Multiplication and Fractions
  - Introduction to Powers and Roots
  - Index Laws
  - Expanding Single Brackets
  - Factorising Single Brackets
  - Introduction to Equations
  - Formulas
  - Inequalities
  - Travel Graphs
- 6.G Geometry (9 lessons)
  - Nets of Three-Dimensional Objects
  - Area of Triangles and Quadrilaterals
  - Surface Area

- 6.NS The Number System (9 lessons)
  - Introduction to Negative Numbers
  - Division Algorithm
  - Dividing Fractions
- 6.RP Ratios and Proportional Relationships (22 lessons)
  - Introduction to Percentages
  - Common Percentages
  - Fractions, Decimals and Percentages
  - Percentage of an Amount
  - One Number as a Percentage of Another
  - Ratios
  - Rates
  - Unit Pricing and Best Buys
- 6.SP Statistics and Probability (25 lessons)
  - Collecting Data
  - Center and Variability
  - Data Displays
  - Box and Whisker Plots

#### Grade 7

- 7.EE Expressions and Equations (14 lessons)
  - Algebraic Fraction Operations
  - Solving Linear Equations
  - Inequalities
- 7.G Geometry (18 lessons)
  - Classifying Three-Dimensional Solids
  - Volume of Prisms and Cylinders
  - Circle Measurements
  - Solve Angle Problems
- 7.NS The Number System (7 lessons)
  - Terminating and Recurring Decimals
  - Operations with Negative Numbers
- 7.RP Ratios and Proportional Relationships (28 lessons)
  - Proportion
  - Increasing and Decreasing by a Percentage
  - Applications of Rates: Income
  - Applications of Rates: Tax
  - Applications of Rates: Saving and Investing
  - Applications of Percentages: Business Finances
  - Simple Interest
- 7.SP Statistics and Probability (54 lessons)
  - Collecting Data
  - Introduction to Sampling
  - Types of Sampling
  - Sample Sizes

- Sampling Variability and Errors
- Comparing Data
- Likelihood
- Outcomes
- Theoretical Probability
- Experimental Probability
- Relative Frequencies
- Displaying Probabilities

## Grade 8

- 8.EE Expressions and Equations (31 lessons)
  - Introduction to Linear Graphs
  - Features of Linear Graphs
  - Equations of Linear Graphs
  - Proportional Graphs
  - Linear Simultaneous Equations
  - Index Laws
  - Problem Solving with Index Laws
  - Scientific Notation/Standard Form
- 8.F Functions (8 lessons)
  - Graphing Linear Equations
  - Modelling Linear Relationships Using Equations and Graphs
- 8.G Geometry (45 lessons)
  - Introduction to Transformations
  - Congruence
  - Similarity
  - Interior and Exterior Angle Sums
  - Angles and Parallel Lines
  - Pythagoras' Theorem
  - Volume of Pyramids, Cones and Spheres
- 8.NS The Number System (2 lessons)
- 8.SP Statistics and Probability (9 lessons)
  - Introduction to Bivariate Data
  - Data Displays
  - Analysing the Trend of a Scatterplot
  - Analysing Bivariate Data with a Line of Best Fit

## High School

- Algebra
  - A-ARP Arithmetic with Polynomials and Rational Expressions (22 lesson)
    - Solving Quadratic Equations
    - Polynomial Equations
    - Rational and Irrational Equations
  - A-CED Creating Equations (2 lessons)
  - A-REI Reasoning with Equations and Inequalities (13 lessons)
    - Inequations



- Non-Linear Simultaneous Equations
    - Circle Equations
    - Solving Equations Using Graphs
    - Linear Programming
  - A-SSE Seeing Structure in Expressions (19 lessons)
    - Quadratic Patterns
    - Other Patterns
    - Expanding Quadratics
    - Factorising Quadratics
- Calculus
  - Differentiation (43 lessons)
    - Introduction to Derivatives
    - Differentiating Polynomials
    - Tangents and Normals
    - Stationary Points
    - Applications
    - Extended Investigations
    - Properties of Functions
    - Differentiation Techniques
  - Integration (39 lessons)
    - Introducing Integration
    - Areas Under Curves
    - Integration Techniques
    - Numerical Methods
    - Differential Equations
    - Applications
- Functions
  - F-BF Building Functions (28 lessons)
    - Sequences and Series
    - Transformations of Functions
  - F-IF Interpreting Functions (33 lessons)
    - Parabolas
    - Polynomial Graphs
    - Exponential Graphs
    - Piece-Wise and Step Graphs
    - Hyperbola Graphs
    - Introduction to Functions
  - F-LE Linear, Quadratic and Exponential Models (13 lessons)
    - Exponential Equations
    - Logarithms
- Geometry
  - G-C: Circles (10 lessons)
    - Angle Theorems for Circles
    - Chord Properties of Circles

- G-CO: Geometric Proofs (1 lesson)
- G-GPE Expressing Geometric Properties with Equations (13 lessons)
  - Gradient and Equation of a Straight Line
  - Line Segments
  - Applications of Coordinate Geometry
  - Parallel and Perpendicular Lines
- G-MG: Modelling with Geometry (4 lessons)
- G-SRT: Similarity, Right Triangles and Trigonometry (25 lessons)
  - Trigonometry
  - Bearings and Elevation
  - Trigonometric Rules
  - Area of a Triangle
  - Special Triangles
  - Trigonometry and the Unit Circle
  - Similarity
- High School Geometry: Introduction to Geometric Proofs (4 lessons)
- Modelling
  - Introduction to Networks (6 lessons)
- Number and Quantity
  - N-CN The Complex Number System (12 lessons)
  - N-Q Quantities (6 lessons)
    - Compound Interest
  - N-RN The Real Number System (8 lessons)
    - Surds
  - N-VM Vector and Matrix Quantities (15 lessons)
    - Matrix Fundamentals
    - Matrix Products
    - Writing Information as a Matrix
    - Matrix Equations
    - Transition Matrices
- Statistics and Probability
  - S-CP Conditional Probability and the Rules of Probability (25 lessons)
    - Describing Events
    - Complementary Events
    - Conditional Probability
    - Independence
    - Venn Diagrams
    - Two-Way Tables
    - Probability Trees
    - The Rules of Probability
  - S-IC Making Inferences and Justifying Conclusions (12 lessons)
    - Sampling Errors
    - Non-Sampling Errors
    - Statistical Reports

- Evaluating Reports
- S-ID Interpreting Categorical and Quantitative Data (56 lessons)
  - Types of Data
  - Frequency Tables
  - Data Displays
  - Shape and Spread in Data
  - Confidence Intervals
  - Standard Deviation
  - Linear Models
  - Comparing Data Sets
- S-MD Using Probability to Make Decisions (21 lessons)
  - Expected Value
  - Binomial Distributions
  - Poisson Distribution
  - Rectangular and Triangular Distributions
  - Risk

# International Baccalaureate

## IB Middle Years: Algebra

- Patterns
  - Elementary (2 lessons)
    - Object and number patterns
  - Basic (6 lessons)
    - Identifying and describing patterns
    - Number sentences
  - Intermediate (3 lessons)
    - Identifying, describing and continuing patterns
- Algebra Skills
  - Elementary
    - Order of Operations (2 lessons)
    - Introduction to Algebra (5 lessons)
    - Substituting and Evaluating Algebraic Expressions (8 lessons)
    - Contextualising Algebra (2 lessons)
  - Basic
    - Expanding (3 lessons)
    - Factorising (4 lessons)
    - Simplifying (2 lessons)
    - Word Problems (2 lessons)
  - Intermediate
    - Simplifying and Evaluating Expressions (3 lessons)
    - Index Notations with Variables (6 lessons)
    - Expanding (4 lessons)
    - Factorising (6 lessons)
  - Advanced
    - Expanding and Factorising (11 lessons)
    - Algebraic Fractions (6 lessons)
    - Using Formulas and Solving Equations (3 lessons)
  - Extension (9 lessons)
    - Polynomials
    - The remainder and factor theorems
- Equations
  - Elementary (8 lessons)
    - Balancing Equations
    - Models and Flow charts
    - Solving Equations
  - Basic (3 lessons)
    - Order of Operations
  - Intermediate (5 lessons)

- Rearranging Equations
    - Solving using methods
    - Linear Equations
  - Advanced
    - Solving Linear Equations (5 lessons)
    - Solving Simultaneous Linear Equations (3 lessons)
    - Linear Inequalities (4 lessons)
    - Solving Quadrating Equations (9 lessons)
  - Extension
    - Quadratic Equations (6 lessons)
    - Exponential Equations (2 lessons)
- Graphs
  - Basic (6 lessons)
    - Plotting Linear relationship
    - Gradient and Equation of a line
    - Reading and Analysing Linear graphs
  - Intermediate
    - Coordinate Geometry (7 lessons)
      - Line Segment
      - Applications
    - Linear Graphs and Rules (10 lessons)
      - Features of Graphs
      - Plotting Linear Graphs
      - Linear Patterns and Rules
      - Travel Graphs
  - Advanced
    - Parallel and Perpendicular Lines (2 lessons)
    - Non-Linear Graphs (7 lessons)
      - Parabolas
      - Circles
      - Exponential Graphs
  - Extension
    - Polynomial Graphs (8 lessons)
      - Features of Graphs
      - Parabolas
      - Cubics
      - Quartics
    - Non-Polynomial Graphs (8 lessons)
      - Non-Polynomial Graphs
      - Functions

## IB Middle Years: Geometry

- 2D Shapes



- Basic (4 lessons)
  - Rectangles and Triangles
  - Composite Shapes
- Intermediate (3 lessons)
  - Polygons
- 3D Objects
  - Intermediate (4 lessons)
    - Prisms and Pyramids
    - Solids
  - Advanced (2 lessons)
- Representing 3D Shapes
  - Basic (2 lessons)
    - Drawing Prisms and Pyramids
  - Intermediate (5 lessons)
    - Nets
- Geometric Reasoning
  - Elementary (1 lesson)
    - Angles
  - Basic (7 lessons)
    - Angles
  - Intermediate
    - Shapes (9 lessons)
      - Angles in a Shape
      - Interior and Exterior Angles
    - Parallel Lines (2 lessons)
  - Advanced
    - Congruence (9 lessons)
      - Conditions for Congruence
    - Similarity (6 lessons)
      - Using Similar Triangles
      - Similarity Tests
    - Proofs (6 lessons)
  - Extension
    - Angle Theorems for Circles (6 lessons)
    - Chord Properties of Circles (4 lessons)
- Pythagoras and Trigonometry
  - Intermediate (2 lessons)
  - Advanced
    - Trigonometry (3 lessons)
    - Bearings and Elevation (2 lessons)
  - Extension
    - Trigonometric Rules (5 lessons)
    - Area of a Triangle (2 lessons)
    - Special Triangles (3 lessons)

- 3D Pythagoras and Trigonometry (3 lessons)
    - Graphing Trigonometric Functions (5 lessons)
- Position and Orientations
  - Elementary (1 lesson)
    - Describing Locations
  - Basic (3 lessons)
    - Using Compasses, Scales and Landmarks
  - Intermediate (3 lessons)
    - Cartesian Planes
- Transformation and Symmetry
  - Elementary (5 lessons)
    - Transforming Shapes
    - Symmetry in Life
  - Basic (12 lessons)
    - Translation
    - Rotation
    - Reflection
    - Magnitude
  - Intermediate (4 lessons)
    - Predicting Patterns
  - Advanced (3 lessons)
    - Multiple Transformations
    - Symmetry of 3D Objects

#### IB Middle Years: Measurement

- Units and Taking Measurements
  - Units and Systems of Measurement
    - Elementary (2 lessons)
    - Intermediate (1 lesson)
  - Linear Measure
    - Basic (1 lesson)
    - Intermediate (2 lessons)
    - Advanced (4 lessons)
  - Area
    - Elementary (1 lesson)
    - Basic (1 lesson)
    - Intermediate (1 lesson)
    - Advanced (2 lessons)
  - Volume and Capacity
    - Basic (1 lesson)
    - Intermediate (3 lessons)
    - Advanced (4 lessons)
  - Time

- Elementary (4 lessons)
      - Language
      - Analog Clocks
    - Basic (4 lessons)
      - Recording Time
      - 24-Hour Time
    - Intermediate (2 lessons)
      - Converting Time
    - Advanced (3 lessons)
      - Scientific Notation
      - Time Zones
  - Mass
    - Intermediate (1 lesson)
    - Advanced (5 lessons)
- Length and Perimeter
  - Elementary (1 lesson)
  - Basic (3 lessons)
  - Intermediate (6 lessons)
    - Unknown Sides
    - Circles
  - Extension (1 lesson)
- Area and Surface Area
  - Basic (2 lessons)
  - Intermediate (7 lessons)
    - Calculating the Area
  - Advanced (9 lessons)
    - Surface Area
  - Extension (1 lesson)
- Volume and Capacity
  - Basic (2 lessons)
  - Intermediate (4 lessons)
  - Advanced (4 lessons)

#### IB Middle Years: Number

- Number and Place Value
  - Elementary (5 lessons)
  - Intermediate (1 lesson)
  - Advanced
    - Associative, Commutative and Distributive Laws (4 lessons)
    - Classifying Numbers (8 lessons)
- Addition and Subtraction
  - Elementary (5 lessons)
  - Basic (3 lessons)



- Multiplication and Division
  - Basic (7 lessons)
    - Multiples and Division
    - Factors
  - Intermediate (4 lessons)
  - Advanced (11 lessons)
    - Factors and Multiples
    - Prime Numbers and Prime Factors
    - Long Division
- Powers and Roots
  - Basic (3 lessons)
  - Advanced (8 lessons)
    - Indices
    - Index Laws
  - Extension
    - Surds (8 lessons)
    - Logarithms (5 lessons)
- Integers
  - Basic (6 lessons)
    - Positive and Negative Integers
  - Intermediate (4 lessons)
  - Advanced (7 lessons)
- Scientific Notation (2 lessons)
- Fractions, Percentages and Decimals
  - Fractions
    - Elementary (2 lessons)
    - Basic (13 lessons)
      - Adding and Subtracting Fractions
    - Intermediate
      - Comparing Fractions (9 lessons)
      - Adding and Subtracting Fractions (6 lessons)
    - Advanced
      - Introduction to Fractions (5 lessons)
      - Adding Fractions (3 lessons)
      - Subtracting Fractions (4 lessons)
      - Multiplying and Dividing Fractions (4 lessons)
      - Comparing and Using Fractions (5 lessons)
  - Decimals
    - Elementary (5 lessons)
    - Basic
      - Adding and Subtracting Decimals (6 lessons)
      - Multiplying and Dividing Decimals (2 lessons)
    - Intermediate (6 lessons)
    - Advanced (3 lessons)

- Percentages
  - Basic (2 lessons)
  - Intermediate (4 lessons)
- Converting Between Fractions, Decimals and Percentages
  - Basic (2 lessons)
  - Intermediate (2 lessons)
- Proportion
  - Ratios (1 lesson)
  - Rates (6 lessons)
  - Proportion (5 lessons)
- Money and Financial Mathematics
  - Elementary (7 lessons)
    - Money
    - Counting Change
  - Intermediate
    - Income and Tax (4 lessons)
    - Simple Interest (4 lessons)
  - Advanced (4 lessons)
    - Compound Interest

#### IB Middle Years: Probability

- Introduction to Probability
  - Elementary (3 lessons)
  - Basic (6 lessons)
    - Likelihood of Events
    - Probability of Outcomes
  - Intermediate (4 lessons)
  - Advanced (9 lessons)
    - Calculating a Probability
- Probability Concepts
  - Complementary Events (2 lessons)
  - Conditional Probability (6 lessons)
  - Independence (2 lessons)
- Displaying Probabilities
  - Tree Diagrams
    - Intermediate (5 lessons)
    - Advanced (6 lessons)
  - Tables and Venn Diagrams
    - Intermediate (8 lessons)
    - Advanced (5 lessons)
- Experimental Probability
  - Relative Frequencies (2 lessons)
  - Sampling (7 lessons)

## IB Middle Years: Statistics

- Bivariate Data
  - Intermediate (5 lessons)
    - Bivariate data (incl. Time Series).
    - Scatter Plots
  - Advanced (6 lessons)
    - Lines of Best Fit
- Data Collection and Reports
  - Elementary (3 lessons)
  - Basic (5 lessons)
  - Intermediate
    - Data Sources (2 lessons)
    - Collecting Data (3 lessons)
  - Advanced (4 lessons)
  - Extension (7 lessons)
- Data Displays
  - Elementary (11 lessons)
  - Basic (10 lessons)
  - Intermediate (9 lessons)
  - Advanced (4 lessons)
- Single Variable
  - Elementary (6 lessons)
    - Measures of Centre and Spread
  - Basic (5 lessons)
    - Frequency Tables
  - Intermediate (6 lessons)
  - Advanced (8 lessons)
    - Five Point Summary
    - Box and Whisker Plots
  - Extension (6 lessons)
    - Standard Deviation

## Senior Algebra

- Algebraic Skills
  - Simplifying Algebraic Expressions (3 lessons)
  - Expanding and Factorising
    - Expanding (2 lessons)
    - Factorising (4 lessons)
  - Algebraic Fractions (4 lessons)
  - Rearranging Formulae (2 lessons)
- Equations

- Linear Equations (3 lessons)
- Quadratic Equations (9 lessons)
- Exponential Equations (2 lessons)
- Inequations (3 lessons)
- Rational and Irrational Equations (2 lessons)
- Polynomial Equations (9 lessons)
- Exponents and Logarithms
  - Exponents (5 lessons)
  - Logarithms (5 lessons)
- Systems of Equations (10 lessons)
- Sequence and Series (18 lessons)
  - Arithmetic Sequences
  - Geometric Sequences
  - Recursive Sequences
- Complex Numbers (12 lessons)

### Senior Calculus

- Differentiation
  - Introduction to Derivatives (4 lessons)
  - Differentiating Polynomials (6 lessons)
  - Tangents and Normals (5 lessons)
  - Stationary Points (4 lessons)
  - Applications (4 lessons)
  - Properties of Functions (1 lesson)
  - Differentiation Techniques (12 lessons)
- Integration
  - Introducing Integration (4 lessons)
  - Area Under Curves (9 lessons)
  - Integration Techniques (12 lessons)
  - Differential Equations (7 lessons)
  - Applications (3 lessons)

### Senior Functions and Graphs

- Linear Relationships (6 lessons)
- Coordinate Geometry Skills (12 lessons)
- Quadratics Relationships (6 lessons)
- Polynomial Relationships (8 lessons)
- Non-Polynomial Graphs
  - Exponential Equations (5 lessons)
  - Circles and Hyperbola (3 lessons)
  - Piecewise and Step Graphs (4 lessons)
- Simultaneous Equations (10 lessons)

- Functions (3 lessons)

## Senior Geometry

- Geometric Reasoning
  - Angle Laws (10 lessons)
  - Angle Theorems for Circles (6 lessons)
  - Chord Properties (4 lessons)
  - Circle Measure (3 lessons)
  - Bearings (1 lesson)
- Pythagoras and Trigonometry
  - Pythagoras' Theorem (2 lessons)
  - Trigonometric Ratios (5 lessons)
  - Trigonometric Rules (5 lessons)
  - Area of a Triangle (2 lessons)
  - Solving Simple Trigonometric Equations (3 lessons)
  - Defining and Graphing Trigonometric Functions (5 lessons)
- Networks (6 lessons)

## Senior Linear Algebra

- Matrices
  - Matrix Fundamentals (3 lessons)
  - Matrix Products (2 lessons)
  - Writing Information as a Matrix (2 lessons)
  - Matrix Equations (3 lessons)
  - Transition Matrices (5 lessons)

## Senior Measurement

- Metric Units (5 lessons)
- Perimeter (3 lessons)
- Area (3 lessons)
- Surface Area (6 lessons)
- Volume (6 lessons)

## Senior Number

- Fractions (3 lessons)
- Decimals (4 lessons)
- Percentages (8 lessons)
- Ratios (5 lessons)
- Rational and Irrational Numbers (1 lesson)
- Surds (8 lessons)

## Senior Statistics and Probability

- Probability Concepts (9 lessons)

- Displaying Data (11 lessons)
- Probability Distributions (16 lessons)
  - Binomial and Poisson Distributions
  - Normal Distribution
  - Standard Deviation
- Statistics
  - Sampling and Reports (7 lessons)
  - Evaluate Statistical Reports
    - Introduction to Sampling (4 lessons)
    - Evaluating Single Samples (5 lessons)
    - Comparison Within Samples (5 lessons)
    - Comparison Between Samples (5 lessons)
    - Identifying the Evaluation Method (1 lesson)
    - Non-Sampling Errors (3 lessons)
  - Upper Secondary
    - Inference (12 lessons)
    - Interpreting Data and Evaluating Investigations (1 lesson)
  -

# Australian Curriculum

## Year 5

- Number and Place Value (7 lessons)
  - Multiples and Factors
- Fractions and Decimals (18 lessons)
  - Proper, Improper and Mixed Fractions
  - Adding and Subtracting Fractions with the Same Denominator
  - Decimals: Tenths, Hundredths and Thousandths
- Money and Financial Mathematics (3 lessons)
  - Budgets and GST
- Patterns and Algebra (6 lessons)
  - Shape Patterns
  - Number Patterns
  - Number Sentences
- Measurement (9 lessons)
  - Length and Perimeter
  - Area and Rectangles
- Time (7 lessons)
  - Recording Time
  - Reading 12 and 24 Hour Time
- Shape (8 lessons)
  - 2D Shapes and Polygons
  - 3D Solids and Nets
- Location and Transformation
  - Locations (3 lessons)
    - Locations
    - Compasses and Scales
    - Routes and Landmarks
  - Transformations (9 lessons)
    - Line Symmetry
    - Rotational Symmetry
    - Enlargement
    - Symmetry on a Grid
- Geometric Reasoning (8 lessons)
  - Common Angles
  - Types of Angle
  - Estimating Angles
- Chance (6 lessons)
  - Likelihood and Probability
  - Outcomes
  - Chance Games
- Data Representation and Interpretation

- Collecting Data (3 lessons)
  - Introduction to Data
  - Collecting Data
- Data Displays (10 lessons)
  - Data Tables and Tally Marks
  - Picture Graphs
  - Dot Plots and Tables
  - Column/Bar Graphs

## Year 6

- Number and Place Value (17 lessons)
  - Integers
  - Arithmetic
  - Properties of Numbers
- Fractions and Decimals (25 lessons)
  - Adding and Subtracting Decimals
  - Multiplying and Dividing Decimals
  - Comparing Fractions
  - Adding and Subtracting Fractions
  - Decimals, Fractions, Percentages
- Money and Financial Mathematics (5 lessons)
- Patterns and Algebra (5 lessons)
  - Patterns
  - Order of Operations
- Measurement (16 lessons)
- Time (5 lessons)
- Shape (6 lessons)
- Location and Transformation (7 lessons)
  - Locations
  - Transformations
- Geometric Reasoning (7 lessons)
- Chance (4 lessons)
- Data Representation and Interpretation (11 lessons)

## Year 7

- Number and Place Value (28 lessons)
  - Arithmetic
  - Integers
  - Associative, Commutative and Distributive Laws
  - Factors and Multiples
  - Prime Numbers and Prime Factors
  - Squares and Square Roots
- Real Numbers (37 lessons)
  - Integers



- Fractions
- Decimals
- Percentages and Ratios
- Converting Between Fractions, Decimals and Fractions
- Money and Financial Mathematics (6 lessons)
- Patterns and Algebra (23 lessons)
  - Introduction to Algebra
  - Substituting and Evaluating Algebraic Expressions
  - Contextualising Algebra
  - Solving Equations
- Linear and Non-Linear Relationships (17 lessons)
  - Cartesian Planes
  - Linear Graphs
  - Solving Linear Equations
- Measurement (16 lessons)
  - Units of Measurement
  - Length
  - Area
  - Volume
- Time (4 lessons)
- Shape (4 lessons)
- Location and Transformation (6 lessons)
  - Symmetry
  - Transformations
- Geometric Reasoning (9 lessons)
  - Points, Lines, and Angles
  - Triangles
  - Quadrilaterals
- Chance (9 lessons)
- Data Representation and Interpretation (18 lessons)
  - Introduction to Data
  - Mean, Median and Mode
  - Displaying Data

#### Year 8

- Number and Place Value (20 lessons)
  - Integers and Rational Numbers
  - Indices
- Real Numbers (11 lessons)
  - Decimals
  - Percentages
  - Irrational Numbers
  - Ratios and Rates
- Money and Financial Mathematics (4 lessons)

- Patterns and Algebra (11 lessons)
  - Expanding
  - Factorising
  - Simplifying
  - Word Problems
- Linear and Non-Linear Relationships (19 lessons)
  - Linear Graphs
  - Solving Linear Equations
- Measurement (24 lessons)
  - Units
  - Perimeter
  - Area
  - Circles
  - Volume
- Time (4 lessons)
- Geometric Reasoning (10 lessons)
  - Congruence and Transformation of Plane Shapes
  - Congruence of Triangles
  - Congruence of Quadrilaterals
  - Applications
- Chance (10 lessons)
  - Complementary Events
  - Chance Tables and Diagrams
- Data Representation and Interpretation (29 lessons)
  - Introduction
  - Mean, Median and Mode
  - Displaying Data
  - Collecting Data
  - Analysing Data

## Year 9

- Real Numbers (20 lessons)
  - Proportion
  - Rates
  - Indices
  - Scientific Notation
- Money and Financial Mathematics (6 lessons)
  - Income and Tax
  - Simple Interest
- Patterns and Algebra (19 lessons)
  - Simplifying and Evaluating Expressions
  - Index Notations with Variables
  - Expanding
  - Factorising

- Linear and Non-Linear Relationships (26 lessons)
  - Coordinate Geometry
  - Linear Graphs and Equations
  - Solving Linear Equations
  - Non-Linear Relationships
- Measurement (19 lessons)
  - Perimeter
  - Area
  - Surface Area
  - Volume and Capacity
- Time (2 lessons)
- Geometric Reasoning (11 lessons)
  - Angles
  - Similarity
  - Scaling
- Pythagoras and Trigonometry (6 lessons)
  - Pythagoras' Theorem
  - Trigonometry
- Chance (12 lessons)
  - Two-Step Experiments
  - Venn Diagrams and Two-Way Tables
  - Experimental Probability
- Data Representation and Interpretation (2 lessons)

#### Year 10

- Money and Financial Mathematics (4 lessons)
- Patterns and Algebra (20 lessons)
  - Expanding and Factorising
  - Algebraic Fractions
  - Using Formulas and Solving Equations
- Linear and Non-Linear Relationships (22 lessons)
  - Parallel and Perpendicular Lines
  - Solving Linear Equations
  - Solving Simultaneous Equations
  - Linear Inequalities
  - Solving Quadratic Equations
  - Non-Linear Graphs
- Surface Area and Volume (11 lessons)
  - Surface Area
  - Volume
- Geometric Reasoning (9 lessons)
  - Geometric Reasoning
  - Proofs
- Pythagoras and Trigonometry (2 lessons)

- Chance (14 lessons)
  - Multi-Step Experiments
  - Conditional Probability
  - Independence
- Data Representation and Interpretation (17 lessons)
  - Box and Whisker Plots
  - Bivariate Data
  - Statistical Reports

#### Year 10A

- Real Numbers (14 lessons)
  - Rational and Irrational Numbers
  - Surds
  - Logarithms
- Patterns and Algebra (9 lessons)
- Linear and Non-Linear Relationships (24 lessons)
  - Quadratic Equations
  - Exponential Equations
  - Polynomial Graphs
  - Non-Polynomial Graphs
- Surface Area and Volume (9 lessons)
  - Surface Area
  - Volume
- Pythagoras and Trigonometry (19 lessons)
  - Defining And trigonometric Functions
  - Trigonometric Rules
  - Area of a Triangle
  - Solving Simple Trigonometric Equations
  - Pythagoras' Theorem and Trigonometry in 3D
- Geometric Reasoning (4 lessons)
- Chance (7 lessons)
- Data Representation and Interpretation (15 lessons)
  - Standard Deviation
  - Bivariate Data
  - Lines of Best Fit

#### Essential Mathematics 11-12

- Unit 1
  - Topic 1: Calculations, Percentages and Rates (19 lessons)
    - Calculations
    - Percentages
    - Rates
  - Topic 2: Measurement (20 lessons)
    - Linear Measure

- Area
    - Volume and Capacity<sup>1</sup>
    - Mass
  - Topic 3: Algebra (1 lesson)
    - Substitution
  - Topic 4: Graphs (7 lessons)
- Unit 2
  - Topic 1: Representing and Comparing Data (27 lessons)
    - Classifying Data
    - Data Presentation and Interpretation
    - Summarising and Interpreting Data
    - Comparing Data Sets
  - Topic 2: Percentages (5 lessons)
    - Simple Interest
  - Topic 3: Rates and Ratios (2 lessons)
    - Ratios
  - Topic 4: Time and Motion (8 lessons)
    - Time
- Unit 3
  - Topic 1: Measurement (18 lessons)
    - Linear Measure
    - Area Measure
    - Volume and Capacity
  - Topic 2: Scales, Plans and Models (26 lessons)
    - Geometry
    - Interpret Scale Drawings
    - Right-Angled Triangles
  - Topic 3: Graphs (9 lessons)
    - Cartesian Planes
    - Using Graphs
  - Topic 4: Data Collection (15 lessons)
    - Census and Surveys
    - Bivariate Scatterplots
    - Line of Best Fit
- Unit 4
  - Topic 1: Probability and Relative Frequency (16 lessons)
    - Probability Expressions
    - Simulations
    - Simple Probabilities
    - Probability Applications
  - Topic 2: Earth Geometry and Time Zones (1 lesson)
    - Time
  - Topic 3: Loans and Compound Interest (11 lessons)
    - Compound Interest

- Earning Money
- Budgeting
- Tax

## General Mathematics 11-12

- Unit 1
  - Topic 1: Consumer Arithmetic (17 lessons)
    - Percentage Review
    - Rates Review
    - Financial Rates
  - Topic 2: Algebra and Matrices (2 lessons)
    - Linear and Non-Linear Expressions
  - Topic 3: Shape and Measurement (24 lessons)
    - Pythagoras' Theorem
    - Mensuration
    - Similar Figures and Scale Factors
- Unit 2
  - Topic 1: Univariate Data Analysis and the Statistical Investigation Process (21 lessons)
    - The Statistical Investigation Process
    - Single Statistical Variable
    - Comparing Data Sets
  - Topic 2: Applications of Trigonometry (16 lessons)
    - Trigonometric Ratios
    - Trigonometric Rules
    - Area of a Triangle
    - Bearings and Elevation
  - Topic 3: Linear Equations and their Graphs (22 lessons)
    - Linear Equations
    - Straight-Line Graphs and their Applications
    - Simultaneous Linear Equations and their Applications
    - Piece-Wise Linear Graphs and Step Graphs
- Unit 3
  - Topic 1: Bivariate Data Analysis (9 lessons)
    - Numerical Association
    - Linear Modelling
  - Topic 2: Growth and Decay in Sequences (6 lessons)
    - Sequences
  - Topic 3: Graphs and Networks (4 lessons)
    - Networks
- Unit 4
  - Topic 1: Time Series Analysis (2 lessons)
    - Time Series
  - Topic 2: Loans, Investments and Annuities (8 lessons)
    - Simple Interest

- Compound Interest
- Topic 3: Networks and Decision Mathematics (2 lessons)
  - Networks

## Mathematical Methods 11-12

- Unit 1
  - Topic 1: Functions and Graphs (44 lessons)
    - Linear and Linear Relationships
    - Solving Equations
    - Quadratic Relationships
    - Inverse Proportion
    - Powers and Polynomials
    - Graph of Relations
    - Functions
  - Topic 2: Trigonometric Functions (18 lessons)
    - Trigonometric Rule
    - Area of a Triangle
    - Circular Measure and Radian Measure
    - Trigonometric Functions
    - Solving Simple Trigonometric Equations
  - Topic 3: Counting and Probability (15 lessons)
    - Language of Events and Sets
    - Fundamentals of Probability
    - Conditional Probability
    - Independence
- Unit 2
  - Topic 1: Exponential Functions (6 lessons)
    - Indices and the Index Laws
    - Exponential Functions
  - Topic 2: Arithmetic and Geometric Sequence and Series (19 lessons)
  - Topic 3: Introduction to Differential Calculus (28 lessons +3 EE)
    - Rates of Change
    - The Concept of the Derivative
    - Computation of Derivatives
    - Properties of Derivatives
    - Applications of Derivatives
    - Anti-Derivatives
- Unit 3
  - Topic 1: Further Differentiation and Applications (4 lessons)
    - Exponential Functions
    - Differentiation Rules
    - The Second Derivative and Applications of the Derivative
  - Topic 2: Integrals (25 lessons)
    - Anti-Differentiation

- Definite Integrals
    - Applications of Integration
  - Topic 3: Discrete Random Variables (5 lessons)
    - General Discrete Random Variables
    - Binomial Distributions
- Unit 4
  - Topic 1: The Logarithmic Function (5 lessons)
    - Logarithmic Functions
  - Topic 2: Continuous Random Variables and the Normal Distribution (7 lessons)
    - Normal Distributions
  - Topic 3: Interval Estimates for Proportions (7 lessons)
    - Random Sampling

### Specialist Mathematics 11-12

- Unit 1
  - Topic 3: Geometry (16 lessons)
    - Circle Properties and their Proofs
    - Geometric Proofs Using Vectors
    - The Nature of Proof
- Unit 2
  - Topic 3: Real and Complex Numbers (6 lesson)
    - Complex Numbers
    - Properties of Numbers
    - Roots of Equations
- Unit 3
  - Topic 1: Complex Numbers (7 lessons)
    - Complex Arithmetic Using Polar Form
    - Roots of Complex Numbers
  - Topic 2: Functions and Sketching Graphs (5 lessons)
- Unit 4
  - Topic 1: Integration and Applications of Integrations (1 lesson)
    - Integration Techniques
  - Topic 2: Rates of Change and Differential Equations (6 lessons)
    - Differential Equations
    - Parametric Curves and Implicit Differentiation



# New Zealand Curriculum

## NZC Algebra

- Algebra Skills
  - Level 4 (7 lessons)
  - Level 5 (11 lessons)
  - Level 6 (19 lessons)
    - Index Laws
    - Algebraic Simplification
    - Expanding
    - Factorising
    - Algebraic Fractions
    - Substituting and Evaluating
- Solving Equations
  - Level 4 (5 lessons)
  - Level 5 (5 lessons)
  - Level 6 (17 lessons)
    - Linear Equations
    - Quadratic Equations
    - Exponential Equations
    - Inequations
    - Simultaneous Equations
- Patterns and Relationships
  - Level 2 (4 lessons)
  - Level 3 (4 lessons)
  - Level 4 (8 lessons)
  - Level 5 (13 lessons)
  - Level 6 (23 lessons)
    - Linear Relationships
    - Quadratic Relationships
    - Exponential Relationships
    - Other Relationships

## NZC Geometry

- Shapes and Objects
  - Level 2 (2 lessons)
  - Level 3 (10 lessons)
    - 2D Shapes
    - 3D Objects
  - Level 4 (5 lessons)
- Representing 3D Objects
  - Level 3 (2 lessons)
  - Level 4 (3 lessons)

- Geometric Reasoning
  - Level 2 (2 lessons)
  - Level 5 (17 lessons)
    - Angles and Angle Properties
    - Parallel Lines
    - Angles and Shapes
    - Applications
  - Level 6 (35 lessons)
    - Angle Laws
    - Congruence
      - Congruence and Transformation of Plane Shapes
      - Congruence of Triangles
      - Congruence of Quadrilaterals
    - Similarity
    - Angle Theorems for Circles
    - Chord Properties of Circles
    - Proofs
- Position and Orientation
  - Level 2 (3 lessons)
  - Level 3 (2 lessons)
  - Level 4 (3 lessons)
- Pythagoras and Trigonometry
  - Level 5 (5 lessons)
    - Pythagoras' Theorem
    - Trigonometry
  - Level 6 (21 lessons)
    - Pythagoras and Trigonometry
    - Bearings
    - Special Triangles
    - Trigonometric Rules
    - Area of a Triangle
    - Trigonometry and the Unit Circle
- Transformations and Symmetry
  - Level 2 (5 lessons)
  - Level 3 (17 lessons)
    - Translation
    - Reflection
    - Rotation
    - Scaling
    - Repeated Transformations
  - Level 4 (1 lesson)
    - Hands-On Activities

- Units of Measurement
  - Units and Systems of Measurement
    - Level 2 (3 lessons)
    - Level 3 (1 lesson)
    - Level 6 (7 lessons)
      - Rounding and Estimation
      - Metric Units
  - Units of Length
    - Level 2 (1 lesson)
    - Level 3 (1 lesson)
    - Level 4 (4 lessons)
  - Units of Area
    - Level 2 (1 lesson)
    - Level 3 (1 lesson)
    - Level 4 (3 lessons)
  - Units of Volume
    - Level 2 (1 lesson)
    - Level 3 (3 lessons)
    - Level 4 (5 lessons)
  - Units of Mass
    - Level 3 (1 lesson)
    - Level 4 (4 lessons)
- Perimeter
  - Level 3 (2 lessons)
  - Level 4 (3 lessons)
  - Level 5 (4 lessons)
  - Level 6 (3 lessons)
- Area
  - Level 3 (1 lesson)
  - Level 4 (3 lessons)
  - Level 5 (4 lessons)
  - Level 6 (9 lessons)
- Volume and Capacity
  - Level 4 (2 lessons)
  - Level 5 (4 lessons)
  - Level 6 (4 lessons)
- Time
  - Level 2 (3 lessons)
  - Level 3 (2 lessons)
  - Level 4 (10 lessons)
    - Reading Clocks
    - Timetables and Timelines
  - Level 5 (3 lessons)

## NZC Number

- Whole Number Arithmetic
  - Level 2 (9 lessons)
  - Level 3 (11 lessons)
  - Level 4 (8 lessons)
  - Level 5 (2 lessons)
- Powers and Roots
  - Level 4 (2 lessons)
  - Level 5 (8 lessons)
- Factors, Multiples and Primes
  - Level 5 (5 lessons)
- Integers
  - Level 4 (5 lessons)
  - Level 5 (1 lesson)
- Fractions
  - Level 2 (3 lessons)
  - Level 3 (6 lessons)
  - Level 4 (6 lessons)
  - Level 5 (6 lessons)
  - Level 6 (3 lessons)
- Decimals
  - Level 4 (5 lessons)
  - Level 5 (6 lessons)
  - Level 6 (4 lessons)
- Percentages
  - Level 3 (4 lessons)
  - Level 4 (4 lessons)
  - Level 5 (5 lessons)
  - Level 6 (8 lessons)
- Ratios and Rates
  - Level 4 (2 lessons)
  - Level 5 (2 lessons)
  - Level 6 (5 lessons)

## NZC Numeracy

- Calculation and Estimation
  - Level 2 (15 lessons)
  - Level 3 (11 lessons)
  - Level 4 (7 lessons)
- Recognising Patterns
  - Level 2 (1 lesson)
  - Level 3 (4 lesson)
  - Level 4 (8 lessons)
- Statistical Literacy

- Level 2 (3 lessons)
- Level 3 (13 lessons)
  - Collecting Data
  - Data Displays
- Level 4 (10 lessons)

## NZC Statistics

- Collecting Data
  - Level 2 (2 lessons)
  - Level 3 (3 lessons)
  - Level 4 (6 lessons)
  - Level 5 (4 lessons)
- Displaying and Analysing Data
  - Level 2 (1 lesson)
  - Level 3 (10 lessons)
  - Level 4 (9 lessons)
  - Level 5 (29 lessons)
    - Mean, Median, Mode and Range
    - Frequency Tables
    - Multivariate Data
    - Bivariate Data
    - Time Series Data
  - Level 6 (9 lessons)
    - Displaying Data
    - Analysing Data
- Statistical Literacy
  - Level 5 (4 lessons)
- Probability
  - Level 2 (4 lessons)
  - Level 3 (9 lessons)
  - Level 4 (4 lessons)
  - Level 5 (6 lessons)
  - Level 6 (3 lessons)

## NCEA Level 1

- 1.1 Number
  - Rounding and Estimation (4 lessons)
  - Fractions (3 lessons)
  - Percentages (8 lessons)
  - Rates and Ratios (5 lessons)
  - Assessment Preparation
- 1.2 Algebra
  - Algebraic Simplification (3 lessons)

- Algebraic Fractions (2 lessons)
- Expanding (2 lessons)
- Factorising (4 lessons)
- Linear Equations (3 lessons)
- Quadratic Equations (3 lessons)
- Exponential Equations (2 lessons)
- Inequations (3 lessons)
- Manipulating Formulas (2 lessons)
- Simultaneous Equations (4 lessons)
- 1.3 tables, Equations and Graphs
  - Linear Relationships (7 lessons)
  - Quadratic Relationships (7 lessons)
  - Exponential Relationships (5 lessons)
  - Other Relationships (4 lessons)
- 1.4 Linear Algebra Skills
  - Graphing Linear Equations (6 lessons)
  - Solving Equations (7 lessons)
- 1.5 Measurement
  - Metric Units (3 lessons)
  - Perimeter (3 lessons)
  - Area (3 lessons)
  - Surface Area (3 lessons)
  - Volume (4 lessons)
  - Assessment Preparation
- 1.6 Geometric Reasoning
  - Angle Laws (10 lessons)
  - Right Angle Triangles (8 lessons)
    - Pythagoras' Theorem
    - Trigonometry
  - Bearings (3 lessons)
- 1.7 Right-Angled Triangles Skills
  - Pythagoras' Theorem (3 lessons)
  - Trigonometry (5 lessons)
  - Bearings and Elevation (2 lessons)
- 1.10 Multivariate Data (9 lessons)
  - PPDAC: The Statistical Enquiry Cycle
- 1.12 Chance and Data
  - Interpreting Data and Evaluating Investigations (4 lessons)
  - Probability Concepts (3 lessons)
  - Exam Questions

## NCEA Level 2

- 2.1 Co-ordinate Geometry Skills (12 lessons)
  - Line Segments



- Equations of a Line
- Applications of Coordinate Geometry
- 2.2 Graphical Methods Skills (27 lessons)
  - Parabolas
  - Polynomial Graphs
  - Exponential Graphs
  - Hyperbola Graphs
  - Piecewise and Step Graphs
  - Trigonometric Graphs
  - Functions
- 2.3 Sequences and Series (17 lessons)
  - Arithmetic Sequences
  - Geometric Sequences
  - Recursive Sequences
- 2.4 Trigonometry (10 lessons)
  - Non-Right-Angled Triangles
    - Trigonometric Rules
    - Area of a Triangle
  - Circular Measure
- 2.5 Networks (6 lessons)
- 2.6 Algebra (24 lessons)
  - Expanding and Factorising
  - Algebraic Fractions
  - Changing the Subject of a Formula
  - Exponents
  - Logarithms
  - Quadratic Equations
- 2.7 Calculus
  - Differentiation (20 lessons)
    - Introduction to Derivatives
    - Differentiating Polynomials
    - Tangents and Normals
    - Stationary Points
    - Applications of Derivatives
  - Anti-Differentiation (4 lessons)
- 2.9 Inference (11 lessons)
  - PPDAC cycle
- 2.12 Probability (16 lessons)
  - Probability Methods
  - The Normal Distribution
- 2.14 Systems of Equations (9 lessons)
  - Solving Simultaneous Equations
  - Applications

## NCEA Level 3

- 3.3 Trigonometry Skills
  - Introducing Trigonometric Functions (9 lessons)
- 3.5 Complex Numbers
  - Solving Equations (11 lessons)
  - Complex Numbers (12 lessons)
  - Exam Questions
- 3.6 Differentiation
  - Features of Graphs (2 lessons)
  - Differentiation Techniques (12 lessons)
  - Applications of Differentiation (4 lessons)
  - Exam Questions
- 3.7 Integration
  - Integration Techniques (13 lessons)
  - Areas Under Curves (8 lessons)
  - Numerical Methods (3 lessons)
  - Differential Equations (9 lessons)
  - Exam Questions
- 3.10 Formal Inference (12 lessons)
- 3.12 Evaluate Statistical Reports
  - Introduction to Sampling (4 lessons)
  - Evaluating Single Samples (5 lessons)
  - Comparison Within Samples (5 lessons)
  - Comparison Between Samples (5 lessons)
  - Identifying the Evaluation Method (1 lesson)
  - Non-Sampling Errors (3 lessons)
- 3.12 Probability
  - Probability Concepts (4 lessons)
  - Venn Diagrams (3 lessons)
  - Two-Way Tables (2 lessons)
  - Probability Trees (2 lessons)
- 3.14 Probability Distributions
  - Binomial Distribution (3 lessons)
  - Poisson Distribution (3 lessons)
  - Rectangular and Triangular Distribution (3 lessons)
  - Normal Distribution (4 lessons)
  - Exam Questions



# NSW

## Stage 3

- Measurement and Geometry
  - Angles
    - Angles 1 (8 lessons)
    - Angles 2 (7 lessons)
  - Area
    - Area 1 (3 lessons)
    - Area 2 (1 lesson)
  - Length
    - Length 1 (5 lessons)
    - Length 2 (5 lessons)
  - Mass
    - Mass 1 (3 lessons)
    - Mass 2 (4 lessons)
  - Position (3 lessons)
  - Three-Dimensional Space
    - Three-Dimensional Space 1 (6 lessons)
    - Three-Dimensional Space 2 (6 lessons)
  - Time
    - Time 1 (7 lessons)
    - Time 2 (5 lessons)
  - Two-Dimensional Space
    - Two-Dimensional Space 1 (15 lessons)
    - Two-Dimensional Space 2 (4 lessons)
  - Volume and Capacity
    - Volume and Capacity 1 (2 lessons)
    - Volume and Capacity 2 (7 lessons)
- Number and Algebra
  - Addition and Subtraction
    - Addition and Subtraction 1 (2 lessons)
    - Addition and Subtraction 2 (4 lessons)
  - Fractions and Decimals
    - Fractions and Decimals 1 (18 lessons)
    - Fractions and Decimals 2
      - Percentages (7 lessons)
      - Fractions (15 lessons)
      - Decimals (8 lessons)
  - Multiplication and Division
    - Multiplication and Division 1 (3 lessons)
    - Multiplication and Division 2 (6 lessons)
  - Patterns and Algebra

- Patterns and Algebra 1 (6 lessons)
    - Patterns and Algebra 2 (6 lessons)
  - Whole Numbers
    - Whole Numbers 1 (5 lessons)
    - Whole Numbers 2 (12 lessons)
- Statistics and Probability
  - Chance
    - Chance 1 (6 lessons)
    - Chance 2 (4 lessons)
  - Data
    - Data 1 (13 lessons)
    - Data 2 (10 lessons)

#### Stage 4

- Measurement and Geometry
  - Angle Relationships (5 lessons)
  - Area
    - Units of Area (3 lessons)
    - Calculating Area (8 lessons)
  - Length
    - Units of Length (2 lessons)
    - Perimeter (5 lessons)
    - Irrational Numbers (1 lesson)
    - Circles (3 lessons)
  - Properties of Geometrical Figures
    - Symmetry (2 lessons)
    - Triangles (4 lessons)
    - Quadrilaterals (3 lessons)
    - Congruence and Transformation of Plane Shapes (3 lessons)
    - Congruence of Triangles (2 lessons)
    - Congruence of Quadrilaterals (3 lessons)
  - Right-Angled Triangles (Pythagoras)
    - Working with Algebra (3 lessons)
    - Squares and Square Roots (2 lessons)
    - Pythagoras' Theorem (2 lessons)
    - Irrational Numbers (1 lesson)
  - Time (4 lessons)
  - Volume
    - Solids (4 lessons)
    - Units of Volume (4 lessons)
    - Calculating Volume (7 lessons)
- Number and Algebra
  - Algebraic Techniques
    - Introduction to Algebra (5 lessons)

- Simplifying and Evaluating Algebra (8 lessons)
  - Contextualising Algebra (2 lessons)
  - Expanding (2 lessons)
  - Factorising (4 lessons)
  - Simplifying (2 lessons)
  - Word Problems (2 lessons)
- Computation with Integers
  - Computation with Integers (5 lessons)
  - Arithmetic Laws (4 lessons)
  - Integers and Rational Numbers (13 lessons)
    - Operations with Integers
      - Addition and Subtraction
      - Multiplication and Division
    - Operations with Rational Numbers
- Equations
  - Methods for Solving Equations (12 lessons)
  - Solving Quadratic Equations (1 lesson)
- Financial Mathematics
  - Unit Pricing and Best Buys (3 lessons)
  - Business Finances (5 lessons)
  - Tax (2 lessons)
- Fractions, Decimals and Percentages
  - Fractions (21 lessons)
    - Introduction to Fractions
    - Adding Fractions
    - Subtracting Fractions
    - Multiplying and Dividing Fractions
    - Comparing and Using Fractions
  - Decimals (9 lessons)
  - Percentages (6 lessons)
  - Converting Between Real Numbers (3 lessons)
  - Irrational Numbers (1 lesson)
- Indices
  - Index Notation and Prime Numbers (6 lessons)
  - Squares and Square Roots (3 lessons)
  - Multiplying and Dividing Indices (2 lessons)
  - Powers of Zero and Positive Integer Indices (2 lessons)
- Linear Relationships
  - Cartesian Planes (3 lessons)
  - Translation, Reflection and Rotation (3 lessons)
  - Linear Graphs (7 lessons)
- Ratios and Rates
  - Ratios and Rates (3 lessons)
  - Rate Graphs (4 lessons)

- Statistics and Probability
  - Data Collection and Representation
    - Collecting Data (8 lessons)
    - Data Displays (8 lessons)
    - Analysing Data (1 lesson)
  - Probability
    - Introduction to Probability (6 lessons)
    - Finding Probability (3 lessons)
    - Complementary Events (2 lessons)
    - Descriptions of Probability (2 lessons)
    - Chance Tables and Venn Diagrams (6 lessons)
  - Single Variable Data Analysis
    - Mean, Median, Mode and Range (7 lessons)
    - Investigating Data Values (5 lessons)
    - Interpreting Data (3 lessons)

### Stage 5.1

- Measurement and Geometry
  - Area and Surface Area
    - Area (6 lessons)
    - Surface Area (1 lesson)
  - Numbers of Any Magnitude (3 lessons)
  - Properties of Geometrical Figures
    - Angles (3 lessons)
    - Similarity (2 lessons)
    - Scaling (4 lessons)
  - Right-Angled Triangles (Trigonometry) (4 lessons)
- Number and Algebra
  - Financial Mathematics
    - Income (8 lessons)
    - Tax (2 lessons)
    - Simple Interest (3 lessons)
    - Compound Interest (4 lessons)
  - Indices
    - Index Laws with Variables (6 lessons)
    - Algebraic Products and Quotients (2 lessons)
    - Integer Indices (3 lessons)
  - Linear Relationships
    - Coordinate Geometry (7 lessons)
    - Linear Graphs (3 lessons)
    - Parallel and Perpendicular Lines (2 lessons)
  - Non-Linear Relationships (8 lessons)
- Statistics and Probability
  - Probability

- Venn Diagrams and Two-Way Tables (5 lessons)
  - Experimental Probability (2 lessons)
- Single Variable Data Analysis
  - Data Sources (2 lessons)
  - Shape and Spread in Data (6 lessons)
  - Comparing Data (4 lessons)
  - Statistical Reports (4 lessons)

## Stage 5.2

- Measurement and Geometry
  - Area and Surface Area (3 lessons)
  - Properties of Geometrical Figures
    - Congruence and Transformation of Plane Shapes (3 lessons)
    - Congruence of Triangles (3 lessons)
    - Congruence of Quadrilaterals (2 lessons)
    - Proofs (4 lessons)
    - Interior and Exterior Angles (2 lessons)
    - Applications (1 lesson)
  - Right-Angled Triangles (Trigonometry) (5 lessons)
  - Volume (5 lessons)
- Number and Algebra
  - Algebraic Techniques
    - Expanding (4 lessons)
    - Factorising (9 lessons)
    - Algebraic Fractions (6 lessons)
  - Equations
    - Solving Linear Equations (6 lessons)
    - Solving Quadratic Equations (8 lessons)
    - Using Formulas (2 lessons)
    - Solving Simultaneous Linear Equations (3 lessons)
    - Solving Linear Inequalities (4 lessons)
  - Financial Mathematics
    - Compound Interest (5 lessons)
  - Indices
    - Rational Number Indices (2 lessons)
    - Applying Index Laws (3 lessons)
  - Linear Relationships
    - Linear Graphs and Equations (6 lessons)
    - Parallel and Perpendicular Lines (2 lessons)
  - Non-Linear Relationships (7 lessons)
  - Ratios and Rates
    - Proportion (5 lessons)
    - Rates (3 lessons)
- Statistics and Probability

- Bivariate Data Analysis (5 lessons)
- Probability
  - Two-Step Experiments (5 lessons)
  - Multi-Step Events (6 lessons)
  - Conditional Probability (6 lessons)
  - Independence (2 lessons)
- Single Variables Data Analysis (8 lessons)

### Stage 5.3

- Measurement and Geometry
  - Area and Surface Area (8 lessons)
  - Circle Geometry (10 lessons)
    - Angle Theorems for Circles
  - Properties of Geometrical Figures
    - Geometric Reasoning (3 lessons)
    - Proofs (4 lessons)
  - Trigonometry and Pythagoras' Theorem
    - Defining and Graphing Trigonometric Functions (5 lessons)
    - Trigonometric Rules (5 lessons)
    - Area of a Triangle (2 lessons)
    - Solving Simple Trigonometric Equations (3 lessons)
    - Pythagoras' Theorem and Trigonometry in 3D (3 lessons)
  - Volume (4 lessons)
- Number and Algebra
  - Algebraic Techniques
    - Algebraic Fractions (5 lessons)
    - Expanding Binomial Products (1 lesson)
    - Factorising Quadratic Expressions (5 lessons)
  - Equations
    - Quadratic Equations (6 lessons)
    - Simultaneous Equations (1 lesson)
    - Using Formulas (2 lessons)
  - Functions and Other Graphs (3 lessons)
  - Linear Relationships
    - Midpoint, Gradient and Distance (7 lessons)
    - Linear Graphs and Equations (9 lessons)
    - Parallel and Perpendicular Lines (2 lessons)
  - Logarithms
    - Logarithms (5 lessons)
    - Solving Exponential Equations (1 lesson)
  - Non-Linear Relationships
    - Non-Linear Graphs (4 lessons)
    - Polynomial Graphs (8 lessons)
    - Non-Polynomial Graphs (4 lessons)

- Polynomials (9 lessons)
- Ratios and Rates
  - Direct Proportion (1 lesson)
  - Inverse Proportion (2 lessons)
  - Proportional Graphs (2 lessons)
  - Rates (6 lessons)
- Surds and Indices
  - Rational and Irrational Numbers (1 lesson)
  - Surds and Indices (8 lessons)
- Statistics and Probability
  - Bivariate Data Analysis
    - Bivariate Data (3 lessons)
    - Lines of Best Fit (6 lessons)
    - Investigating Studies (7 lessons)
  - Single Variable Data Analysis (6 lessons)

#### Mathematics Standard Year 11

- Algebra: Formulae and Equations (4 lessons)
- Algebra: Linear Relationships (5 lessons)
- Measurement: Applications
  - M1.1: Practicalities of Measurements
    - Units of Linear Measure (2 lessons)
    - Units of Area (2 lessons)
    - Units of Volume and Capacity (6 lessons)
  - M1.2: Perimeter, Area and Volume
    - Perimeter
      - Perimeter (5 lessons)
      - Circles (3 lessons)
    - Area (8 lessons)
    - Surface Area (8 lessons)
    - Volume (11 lessons)
    - Pythagoras' Theorem (2 lessons)
    - Scale Factor (5 lessons)
  - M1.3: Units of Energy and Mass (2 lessons)
- Measurement: Working with Time
  - Location (1 lesson)
  - Time (9 lessons)
- Financial Mathematics: Money Matters
  - F1.1: Interest and Depreciation
    - Simple Interest (5 lessons)
    - Compound Interest (4 lessons)
    - Tax (3 lessons)
  - F1.2: Earning and Managing Money (1 lesson)
  - F1.3: Budgeting and Household Expenses (2 lessons)

- Statistics: Data Analysis
  - S1.1: Classifying and Representing Data
    - Data Presentation and Interpretation (12 lessons)
    - Classifying Data (1 lesson)
    - Surveys and Sampling (6 lessons)
  - S1.2: Summary Statistics
    - Summarising and Interpreting Data
      - Mean, Median and Mode (4 lessons)
      - Shape and Spread in Data (6 lessons)
      - Standard Deviation (6 lessons)
    - Comparing Data Sets (6 lessons)
- Statistics: Relative Frequency and Probability
  - Probability Expressions (5 lessons)
  - Simulations (4 lessons)
  - Simple Probabilities (5 lessons)
  - Probability Applications (2 lessons)

## Mathematics Standard 1 Year 12

- Algebra: Types of Relationships
  - A3.1: Simultaneous Linear Equations (5 lessons)
  - A3.2: Graphs of Practical Situations
    - Linear Graphs (5 lessons)
    - Piecewise and Step Graphs (4 lessons)
    - Exponentials (2 lessons)
- Measurement: Right-Angled Triangles
  - Pythagoras' Theorem (2 lessons)
  - Trigonometry (3 lessons)
  - Bearings and Elevation (2 lessons)
- Measurement: Rates (4 lessons)
- Measurement: Scale Drawings (7 lessons)
- Financial Mathematics: Investment
  - Simple Interest (5 lessons)
  - Compound Interest (4 lessons)
- Financial Mathematics: Depreciation and Loans (1 lesson)
- Further Statistical Analysis
  - S3.1: The Statistical Investigation Process for a Survey
    - Sampling (6 lessons)
    - The Statistical Investigation Process (9 lessons)
  - S3.2: Exploring and Describing Data Arising From Two Quantitative Variables
    - Bivariate Scatter Plots (3 lessons)
    - Line of Best Fit (6 lessons)
- Networks and Paths
  - N1.1: Networks (3 lessons)
  - N1.2: Shortest Paths (3 lessons)



## Mathematics Standard 2 Year 12

- Algebra: types of Relationships
  - A4.1: Simultaneous Linear Equations (5 lessons)
  - A4.2: Non-Linear Relationships
    - Quadratic Relationships
      - Parabolas (3 lessons)
      - Equations (7 lessons)
    - Inverse Proportion (2 lessons)
    - Exponentials (2 lessons)
- Measurement: Non-Right-Angled Trigonometry
  - Bearings and Elevation (2 lessons)
  - Trigonometric Rules (5 lessons)
  - Area of a Triangle (2 lessons)
- Measurement: Rates and Ratios
  - Rates (4 lessons)
  - Ratios (2 lessons)
  - Scale Drawings (5 lessons)
- Financial Mathematics: Investments and Loans
  - F4.1: Investments
    - Simple Interest (4 lessons)
    - Compound Interest (4 lessons)
  - F4.2: Depreciation and Loans (1 lesson)
- Financial Mathematics: Annuities (1 lesson)
- Statistics: Bivariate Data Analysis
  - Bivariate Scatter Plots (3 lessons)
  - Line of Best Fit (6 lessons)
- Statistics: The Normal Distribution (6 lessons)
- Network Concepts
  - N1.1: Networks (3 lessons)
  - N1.2: Shortest Paths (3 lessons)

## Mathematics Advanced Year 11

- Working with Functions
  - F1.1: Algebraic Techniques
    - Indices and the Index Laws (4 lessons)
    - Quadratic Equations (8 lessons)
    - Algebraic Equations (4 lessons)
  - F1.2: Introduction to Functions (7 lessons)
  - F1.3: Linear, Quadratic and Cubic Functions
    - Linear Equations (4 lessons)
    - Parabolas (5 lessons)
    - Simultaneous Equations (5 lessons)
    - Cubic Functions (3 lessons)

- F1.4: Further Functions and Relations
  - Polynomials (3 lessons)
  - Inverse Proportion (2 lessons)
  - Graphs of Relations (1 lesson)
  - Inverse Functions and Transformations (1 lesson)
- Trigonometry and measure of Angles
  - T1.1: Trigonometry
    - Pythagoras' Theorem (3 lessons)
    - Trigonometry (5 lessons)
    - Bearings and Elevation (2 lessons)
    - Trigonometric Rules (5 lessons)
    - Area of a Triangle (2 lessons)
  - T1.2: Radians
    - Defining and Graphing Trigonometric Functions (5 lessons)
    - Special Triangles (3 lessons)
    - Arcs, Sectors and Segments (2 lessons)
- Calculus: Introduction to Differentiation
  - C1.1-2: Gradients of Tangents and Difference Quotients (1 lesson)
  - C1.3: The Derivative Function and its Graph (4 lessons)
  - C1.4: Calculating with Derivatives
    - Differentiating Polynomials (5 lessons)
    - Tangents and Normals (5 lessons)
    - Differentiation Rules (3 lessons)
    - Applications of Differentiation (3 lessons)
- Exponential and Logarithmic Functions
  - E1.1: Introducing Logarithms (1 lesson)
  - E1.2: Logarithmic Laws and Applications (4 lessons)
  - E1.3: The Exponential Function and Natural Logarithms (2 lessons)
  - E1.4: Graphs and Applications of Exponential and Logarithmic Functions (2 lessons)
- Statistics: Probability and Discrete Probability Distributions
  - S1.1: Probability and Venn Diagrams
    - Language of Events and Sets (5 lessons)
    - Relative Frequencies (2 lessons)
    - Tree Diagrams and Arrays (5 lessons)
    - Conditional Probability (6 lessons)
    - Independence (2 lessons)
  - S1.2: Discrete Probability Distributions
    - Discrete Random Variables (1 lesson)
    - Binomial Distributions (3 lessons)

#### Mathematics Advanced Year 12

- Functions Graphing Techniques (1 lesson)
- Trigonometric Functions and Graphs (1 lesson)
- Calculus: Differential Calculus

- C2.1: Differentiation of Trigonometric, Exponential and Logarithmic Functions (3 lessons)
- C2.2: Rules of Differentiation (5 lessons)
- Calculus: Applications of Differentiation
  - C3.1: The First and Second Derivatives (4 lessons)
  - C3.2: Applications of the Derivative (2 lessons)
- Calculus: Integral Calculus
  - C4.1: The Anti-Derivative (16 lessons)
  - C4.2: Areas and the Definite Integral
    - Definite Integrals (4 lessons)
    - Applications of Integration
      - Area Under Curves (4 lessons)
      - Numerical Methods (3 lessons)
- Modelling Financial Situations
  - M1.1: Modelling Investments and Loans (4 lessons)
  - M1.2: Arithmetic Sequences and Series (7 lessons)
  - M1.3: Geometric Sequences and Series (4 lessons)
  - M1.4: Financial Applications of Sequences and Series (6 lessons)
- Statistics: Descriptive Statistics and Bivariate Data Analysis
  - S2.1: Data and Summary Statistics
    - Single Statistical Variable
      - Standard Deviation (6 lessons)
      - Shape and Spread in Data (4 lessons)
      - Types of Data (1 lesson)
      - Clusters and Outliers (1 lesson)
    - Comparing Data Sets (2 lessons)
  - S2.2: Bivariate Data Analysis
    - The Statistical Investigation Process (9 lessons)
    - Numerical Association (3 lessons)
    - Linear Modelling (6 lessons)
- Statistics: Random Variables
  - S3.2: The Normal Distribution (6 lessons)

#### Mathematics Extension 1 Year 11

- Further Work with Functions
  - F1.1: Graphical Relationships (5 lessons)
  - F1.2: Inequalities
    - Inequalities (4 lessons)
    - Linear Programming (3 lessons)
  - F1.3: Inverse Functions (1 lesson)
  - F1.4: Parametric Form of a Function or Relation (1 lesson)
- Polynomial Functions
  - F2.1: Remainder and Factor Theorems (8 lessons)
  - F2.2: Sums and Products of Roots of Polynomials (1 lesson)
- Inverse Trigonometric Functions (1 lesson)

- Calculus: Rates of Change
  - C1.1: Rates of Change with Respect to Time (2 lessons)
  - C1.2: Exponential Growth and Decay (3 lessons)
  - C1.3: Related Rates of Change (2 lessons)

#### Mathematics Extension 1 Year 12

- Further Calculus Skills
  - Anti-Differentiation (13 lessons)
  - Definite Integrals (4 lessons)
- Applications of Calculus
  - C3.1: Further Area and Volumes of Solids of Revolution
    - Area Under Curves (4 lessons)
    - Numerical Methods (3 lessons)
  - C3.2: Differentiation Equations (2 lessons)
- Statistics: The Binomial Distribution
  - S1.1: Bernoulli and Binomial Distributions (3 lessons)
  - S1.2: Normal Approximation for the Sample Proportion (6 lessons)

#### Mathematics Extension 2 Year 12

- Introduction to Complex Numbers
  - N1.1: Arithmetic of Complex Numbers (5 lessons)
  - N1.2: Geometric Representation of a Complex Number (1 lesson)
  - N1.3: Other Representations of Complex Numbers (1 lesson)
- Using Complex Numbers
  - N2.1: Solving Equations with Complex Numbers (4 lessons)
  - N2.2: Geometrical Implications of Complex Numbers (1 lesson)
- Calculus: Further Integration (1 lesson)
- Applications of Calculus to Mechanics (4 lessons)

# QLD

## Year 5

- Number and Place Value (7 lessons)
  - Multiples and Factors
- Fractions and Decimals (18 lessons)
  - Proper, Improper and Mixed Fractions
  - Adding and Subtracting Fractions with the Same Denominator
  - Decimals: Tenths, Hundredths and Thousandths
- Money and Financial Mathematics (3 lessons)
  - Budgets and GST
- Patterns and Algebra (6 lessons)
  - Shape Patterns
  - Number Patterns
  - Number Sentences
- Measurement (9 lessons)
  - Length and Perimeter
  - Area and Rectangles
- Time (7 lessons)
  - Recording Time
  - Reading 12 and 24 Hour Time
- Shape (8 lessons)
  - 2D Shapes and Polygons
  - 3D Solids and Nets
- Location and Transformation
  - Locations (3 lessons)
    - Locations
    - Compasses and Scales
    - Routes and Landmarks
  - Transformations (9 lessons)
    - Line Symmetry
    - Rotational Symmetry
    - Enlargement
    - Symmetry on a Grid
- Geometric Reasoning (8 lessons)
  - Common Angles
  - Types of Angle
  - Estimating Angles
- Chance (6 lessons)
  - Likelihood and Probability
  - Outcomes
  - Chance Games
- Data Representation and Interpretation

- Collecting Data (3 lessons)
  - Introduction to Data
  - Collecting Data
- Data Displays (10 lessons)
  - Data Tables and Tally Marks
  - Picture Graphs
  - Dot Plots and Tables
  - Column/Bar Graphs

## Year 6

- Number and Place Value (17 lessons)
  - Integers
  - Arithmetic
  - Properties of Numbers
- Fractions and Decimals (25 lessons)
  - Adding and Subtracting Decimals
  - Multiplying and Dividing Decimals
  - Comparing Fractions
  - Adding and Subtracting Fractions
  - Decimals, Fractions, Percentages
- Money and Financial Mathematics (5 lessons)
- Patterns and Algebra (5 lessons)
  - Patterns
  - Order of Operations
- Measurement (16 lessons)
- Time (5 lessons)
- Shape (6 lessons)
- Location and Transformation (7 lessons)
  - Locations
  - Transformations
- Geometric Reasoning (7 lessons)
- Chance (4 lessons)
- Data Representation and Interpretation (11 lessons)

## Year 7

- Number and Place Value (28 lessons)
  - Arithmetic
  - Integers
  - Associative, Commutative and Distributive Laws
  - Factors and Multiples
  - Prime Numbers and Prime Factors
  - Squares and Square Roots
- Real Numbers (37 lessons)
  - Integers

- Fractions
- Decimals
- Percentages and Ratios
- Converting Between Fractions, Decimals and Fractions
- Money and Financial Mathematics (6 lessons)
- Patterns and Algebra (23 lessons)
  - Introduction to Algebra
  - Substituting and Evaluating Algebraic Expressions
  - Contextualising Algebra
  - Solving Equations
- Linear and Non-Linear Relationships (17 lessons)
  - Cartesian Planes
  - Linear Graphs
  - Solving Linear Equations
- Measurement (16 lessons)
  - Units of Measurement
  - Length
  - Area
  - Volume
- Time (4 lessons)
- Shape (4 lessons)
- Location and Transformation (6 lessons)
  - Symmetry
  - Transformations
- Geometric Reasoning (9 lessons)
  - Points, Lines, and Angles
  - Triangles
  - Quadrilaterals
- Chance (9 lessons)
- Data Representation and Interpretation (18 lessons)
  - Introduction to Data
  - Mean, Median and Mode
  - Displaying Data

#### Year 8

- Number and Place Value (20 lessons)
  - Integers and Rational Numbers
  - Indices
- Real Numbers (11 lessons)
  - Decimals
  - Percentages
  - Irrational Numbers
  - Ratios and Rates
- Money and Financial Mathematics (4 lessons)

- Patterns and Algebra (11 lessons)
  - Expanding
  - Factorising
  - Simplifying
  - Word Problems
- Linear and Non-Linear Relationships (19 lessons)
  - Linear Graphs
  - Solving Linear Equations
- Measurement (24 lessons)
  - Units
  - Perimeter
  - Area
  - Circles
  - Volume
- Time (4 lessons)
- Geometric Reasoning (10 lessons)
  - Congruence and Transformation of Plane Shapes
  - Congruence of Triangles
  - Congruence of Quadrilaterals
  - Applications
- Chance (10 lessons)
  - Complementary Events
  - Chance Tables and Diagrams
- Data Representation and Interpretation (29 lessons)
  - Introduction
  - Mean, Median and Mode
  - Displaying Data
  - Collecting Data
  - Analysing Data

## Year 9

- Real Numbers (20 lessons)
  - Proportion
  - Rates
  - Indices
  - Scientific Notation
- Money and Financial Mathematics (6 lessons)
  - Income and Tax
  - Simple Interest
- Patterns and Algebra (19 lessons)
  - Simplifying and Evaluating Expressions
  - Index Notations with Variables
  - Expanding
  - Factorising



- Linear and Non-Linear Relationships (26 lessons)
  - Coordinate Geometry
  - Linear Graphs and Equations
  - Solving Linear Equations
  - Non-Linear Relationships
- Measurement (19 lessons)
  - Perimeter
  - Area
  - Surface Area
  - Volume and Capacity
- Time (2 lessons)
- Geometric Reasoning (11 lessons)
  - Angles
  - Similarity
  - Scaling
- Pythagoras and Trigonometry (6 lessons)
  - Pythagoras' Theorem
  - Trigonometry
- Chance (12 lessons)
  - Two-Step Experiments
  - Venn Diagrams and Two-Way Tables
  - Experimental Probability
- Data Representation and Interpretation (2 lessons)

#### Year 10

- Money and Financial Mathematics (4 lessons)
- Patterns and Algebra (20 lessons)
  - Expanding and Factorising
  - Algebraic Fractions
  - Using Formulas and Solving Equations
- Linear and Non-Linear Relationships (22 lessons)
  - Parallel and Perpendicular Lines
  - Solving Linear Equations
  - Solving Simultaneous Equations
  - Linear Inequalities
  - Solving Quadratic Equations
  - Non-Linear Graphs
- Surface Area and Volume (11 lessons)
  - Surface Area
  - Volume
- Geometric Reasoning (9 lessons)
  - Geometric Reasoning
  - Proofs
- Pythagoras and Trigonometry (2 lessons)

- Chance (14 lessons)
  - Multi-Step Experiments
  - Conditional Probability
  - Independence
- Data Representation and Interpretation (17 lessons)
  - Box and Whisker Plots
  - Bivariate Data
  - Statistical Reports

#### Year 10A

- Real Numbers (14 lessons)
  - Rational and Irrational Numbers
  - Surds
  - Logarithms
- Patterns and Algebra (9 lessons)
- Linear and Non-Linear Relationships (24 lessons)
  - Quadratic Equations
  - Exponential Equations
  - Polynomial Graphs
  - Non-Polynomial Graphs
- Surface Area and Volume (9 lessons)
  - Surface Area
  - Volume
- Pythagoras and Trigonometry (19 lessons)
  - Defining And trigonometric Functions
  - Trigonometric Rules
  - Area of a Triangle
  - Solving Simple Trigonometric Equations
  - Pythagoras' Theorem and Trigonometry in 3D
- Geometric Reasoning (4 lessons)
- Chance (7 lessons)
- Data Representation and Interpretation (15 lessons)
  - Standard Deviation
  - Bivariate Data
  - Lines of Best Fit

#### Essential Mathematics

- Fundamental Topic: Calculations (6 lessons)
  - Rounding and Estimation
- Unit 1
  - Topic 1: Number (17 lessons)
    - Ratios
    - Rates
    - Percentages

- Topic 2: Representing Data (6 lessons)
  - Classifying Data
  - Data Presentation and Interpretation
- Topic 3: Graphs (12 lessons)
  - Reading, Interpreting and Drawing Graphs
  - Using Graphs
- Unit 2
  - Topic 1: Managing Money (3 lessons)
    - Earning Money
    - Budgeting
  - Topic 2: Time and Money (9 lessons)
  - Topic 3: Data Collection (6 lessons)
- Unit 3
  - Topic 1: Measurement (58 lessons)
    - Geometry
    - Linear Measure
    - Area
    - Surface Area
    - Volume and Capacity
    - Mass
  - Topic 2: Scales, Plans and Models (12 lessons)
    - Interpret Scale Drawings
    - Right-Angled Triangles
  - Topic 3: Summarising and Interpreting Data (16 lessons)
    - Summarising and Interpreting Data
    - Comparing Data Sets
- Unit 4
  - Topic 1: Bivariate Graphs (13 lessons)
    - Cartesian Planes
    - Bivariate Scatterplots
    - Line of Best Fit
  - Topic 2: Probability and Relative Frequencies (14 lessons)
    - Probability Expressions
    - Simulations
    - Simple Probabilities
  - Topic 3: Loans and Compound Interest (5 lessons)
    - Compound Interest

## General Mathematics

- Unit 1
  - Topic 1: Consumer Arithmetic (17 lessons)
    - Percentages Review
    - Rates Review
    - Financial Rates

- Topic 2: Shape and Measurement (24 lessons)
  - Pythagoras' Theorem
  - Mensuration
  - Similar Figures and Scale Factors
- Topic 3: Linear Equations and their Graphs (22 lessons)
  - Linear Equations<sup>2</sup>
  - Straight-Line Graphs and their Applications
  - Simultaneous Linear Equations and their Applications
  - Piece-Wise Linear Graphs and Step Graphs
- Unit 2
  - Topic 1: Applications of Trigonometry (16 lessons)
    - Trigonometric Ratios
    - Trigonometric Rules
    - Area of a Triangle
    - Bearings and Elevation
  - Topic 2: Algebra and Matrices (3 lessons)
  - Topic 3: Univariate Data Displays (28 lessons)
    - The Statistical Investigation Process
    - Single Statistical Variable
    - Comparing Data Sets
- Unit 3
  - Topic 1: Bivariate Data Analysis (11 lessons)
    - Numerical Association
    - Linear Modelling
  - Topic 2: Time Series Analysis (2 lessons)
  - Topic 3: Growth and Decay in Sequences (6 lessons)
  - Topic 4: Earth Geometry and Time Zones (1 lesson)
- Unit 4
  - Topic 1: Loans, Investments and Annuities (8 lessons)
    - Simple Interest
    - Compound Interest
  - Topic 2: Graphs and Networks (4 lessons)
  - Topic 3: Networks and Decision Mathematics (2 lessons)

## Mathematical Methods

- Unit 1
  - Topic 1: Arithmetic and Geometric Sequences and Series 1 (8 lessons)
  - Topic 2: Functions and Graphs (33 lessons)
    - Functions
    - Quadratic Relationships
    - Inverse Proportion
    - Powers and Polynomials
    - Graphs of Relations
  - Topic 3: Counting and Probability (15 lessons)

- Language of Events and Sets
    - Fundamentals of Probability
    - Conditional Probability
    - Independence
  - Topic 4: Exponential Functions 1 (4 lessons)
    - Indices and Index Laws
  - Topic 5: Arithmetic and Geometric Sequences and Series (14 lessons)
    - Mixed Sequences and Series
- Unit 2
  - Topic 1: Exponential Functions 2 (2 lessons)
  - Topic 2: The Logarithmic Function 1 (1 lesson)
  - Topic 3: Trigonometric Functions 1 (10 lessons)
    - Circular Measure and Radian Measure
    - Trigonometric Functions
    - Solving Simple Trigonometric Equations
  - Topic 4: Introduction to Differential Calculus (32 lessons)
    - Rates of Change and the Concept of the Derivative
    - Properties and Computation of Derivatives
    - Applications of Derivatives
  - Topic 5: Further Differentiation and Applications 1 (5 lessons)
  - Topic 6: Discrete Random Variables (1 lesson)
- Unit 3
  - Topic 1: The Logarithmic Function 2 (4 lessons)
  - Topic 2: Further Differentiation and Applications 2 (4 lessons)
  - Topic 3: Integrals (18 lessons)
    - Anti-Derivatives
    - Anti-Differentiation
    - Definite Integrals
    - Applications of Integration
- Unit 4
  - Topic 1: Further Differentiation and Applications 3 ( 1 lesson)
  - Topic 2: Trigonometric Functions 2 (8 lessons)
    - Trigonometric Rules
    - Area of a Triangle
  - Topic 3: Discrete Random Variables 2 (4 lessons)
  - Topic 4: Continuous Random Variables and the Normal Distribution (7 lessons)
  - Topic 5: Interval Estimates for Proportions (7 lessons)

## Specialist Mathematics

- Unit 1
  - Topic 3: Introduction to Proof (17 lessons)
    - The Nature of Proof
    - Rational and Irrational Numbers
    - Circle Properties and their Proofs

- Geometric Proofs Using Vectors
- Unit 2
  - Topic 1: Complex Numbers 1 (8 lessons)
    - Complex Numbers
    - Complex Arithmetic Using Polar Form
    - Roots of Equations
- Unit 3
  - Topic 3: Complex Numbers 2 (4 lessons)
    - Complex Arithmetic Using Polar Form
    - Roots of Complex Numbers
- Unit 4
  - Topic 1: Integration and Applications of Integration (11 lessons)
    - Integration Techniques
    - Applications of Integral Calculus
  - Topic 2: Rates of Change and Differential Equations (5 lessons)
    - Differential Equations
- Parametric Curves and Implicit Differentiation

# VIC

## Level 5

- Number and Place Value (7 lessons)
  - Multiples and Factors
- Fractions and Decimals (18 lessons)
  - Proper, Improper and Mixed Fractions
  - Adding and Subtracting Fractions with the Same Denominator
  - Decimals: Tenths, Hundredths and Thousandths
- Money and Financial Mathematics (3 lessons)
  - Budgets and GST
- Patterns and Algebra (6 lessons)
  - Shape Patterns
  - Number Patterns
  - Number Sentences
- Measurement (9 lessons)
  - Length and Perimeter
  - Area and Rectangles
- Time (7 lessons)
  - Recording Time
  - Reading 12 and 24 Hour Time
- Shape (8 lessons)
  - 2D Shapes and Polygons
  - 3D Solids and Nets
- Location and Transformation
  - Locations (3 lessons)
    - Locations
    - Compasses and Scales
    - Routes and Landmarks
  - Transformations (9 lessons)
    - Line Symmetry
    - Rotational Symmetry
    - Enlargement
    - Symmetry on a Grid
- Geometric Reasoning (8 lessons)
  - Common Angles
  - Types of Angle
  - Estimating Angles
- Chance (6 lessons)
  - Likelihood and Probability
  - Outcomes
  - Chance Games
- Data Representation and Interpretation

- Collecting Data (3 lessons)
  - Introduction to Data
  - Collecting Data
- Data Displays (10 lessons)
  - Data Tables and Tally Marks
  - Picture Graphs
  - Dot Plots and Tables
  - Column/Bar Graphs

#### Level 6

- Number and Place Value (17 lessons)
  - Integers
  - Arithmetic
  - Properties of Numbers
- Fractions and Decimals (25 lessons)
  - Adding and Subtracting Decimals
  - Multiplying and Dividing Decimals
  - Comparing Fractions
  - Adding and Subtracting Fractions
  - Decimals, Fractions, Percentages
- Money and Financial Mathematics (5 lessons)
- Patterns and Algebra (5 lessons)
  - Patterns
  - Order of Operations
- Measurement (16 lessons)
- Time (5 lessons)
- Shape (6 lessons)
- Location and Transformation (7 lessons)
  - Locations
  - Transformations
- Geometric Reasoning (7 lessons)
- Chance (4 lessons)
- Data Representation and Interpretation (11 lessons)

#### Level 7

- Number and Place Value (28 lessons)
  - Arithmetic
  - Integers
  - Associative, Commutative and Distributive Laws
  - Factors and Multiples
  - Prime Numbers and Prime Factors
  - Squares and Square Roots
- Real Numbers (37 lessons)
  - Integers



- Fractions
- Decimals
- Percentages and Ratios
- Converting Between Fractions, Decimals and Fractions
- Money and Financial Mathematics (6 lessons)
- Patterns and Algebra (23 lessons)
  - Introduction to Algebra
  - Substituting and Evaluating Algebraic Expressions
  - Contextualising Algebra
  - Solving Equations
- Linear and Non-Linear Relationships (17 lessons)
  - Cartesian Planes
  - Linear Graphs
  - Solving Linear Equations
- Measurement (16 lessons)
  - Units of Measurement
  - Length
  - Area
  - Volume
- Time (4 lessons)
- Shape (4 lessons)
- Location and Transformation (6 lessons)
  - Symmetry
  - Transformations
- Geometric Reasoning (9 lessons)
  - Points, Lines, and Angles
  - Triangles
  - Quadrilaterals
- Chance (9 lessons)
- Data Representation and Interpretation (18 lessons)
  - Introduction to Data
  - Mean, Median and Mode
  - Displaying Data

#### Level 8

- Number and Place Value (20 lessons)
  - Integers and Rational Numbers
  - Indices
- Real Numbers (11 lessons)
  - Decimals
  - Percentages
  - Irrational Numbers
  - Ratios and Rates
- Money and Financial Mathematics (4 lessons)

- Patterns and Algebra (11 lessons)
  - Expanding
  - Factorising
  - Simplifying
  - Word Problems
- Linear and Non-Linear Relationships (19 lessons)
  - Linear Graphs
  - Solving Linear Equations
- Measurement (24 lessons)
  - Units
  - Perimeter
  - Area
  - Circles
  - Volume
- Time (4 lessons)
- Geometric Reasoning (10 lessons)
  - Congruence and Transformation of Plane Shapes
  - Congruence of Triangles
  - Congruence of Quadrilaterals
  - Applications
- Chance (10 lessons)
  - Complementary Events
  - Chance Tables and Diagrams
- Data Representation and Interpretation (29 lessons)
  - Introduction
  - Mean, Median and Mode
  - Displaying Data
  - Collecting Data
  - Analysing Data

#### Level 9

- Real Numbers (20 lessons)
  - Proportion
  - Rates
  - Indices
  - Scientific Notation
- Money and Financial Mathematics (6 lessons)
  - Income and Tax
  - Simple Interest
- Patterns and Algebra (19 lessons)
  - Simplifying and Evaluating Expressions
  - Index Notations with Variables
  - Expanding
  - Factorising

- Linear and Non-Linear Relationships (26 lessons)
  - Coordinate Geometry
  - Linear Graphs and Equations
  - Solving Linear Equations
  - Non-Linear Relationships
- Measurement (19 lessons)
  - Perimeter
  - Area
  - Surface Area
  - Volume and Capacity
- Time (2 lessons)
- Geometric Reasoning (11 lessons)
  - Angles
  - Similarity
  - Scaling
- Pythagoras and Trigonometry (6 lessons)
  - Pythagoras' Theorem
  - Trigonometry
- Chance (12 lessons)
  - Two-Step Experiments
  - Venn Diagrams and Two-Way Tables
  - Experimental Probability
- Data Representation and Interpretation (2 lessons)

#### Level 10

- Money and Financial Mathematics (4 lessons)
- Patterns and Algebra (20 lessons)
  - Expanding and Factorising
  - Algebraic Fractions
  - Using Formulas and Solving Equations
- Linear and Non-Linear Relationships (22 lessons)
  - Parallel and Perpendicular Lines
  - Solving Linear Equations
  - Solving Simultaneous Equations
  - Linear Inequalities
  - Solving Quadratic Equations
  - Non-Linear Graphs
- Surface Area and Volume (11 lessons)
  - Surface Area
  - Volume
- Geometric Reasoning (9 lessons)
  - Geometric Reasoning
  - Proofs
- Pythagoras and Trigonometry (2 lessons)

- Chance (14 lessons)
  - Multi-Step Experiments
  - Conditional Probability
  - Independence
- Data Representation and Interpretation (17 lessons)
  - Box and Whisker Plots
  - Bivariate Data
  - Statistical Reports

#### Level 10A

- Real Numbers (14 lessons)
  - Rational and Irrational Numbers
  - Surds
  - Logarithms
- Patterns and Algebra (9 lessons)
- Linear and Non-Linear Relationships (24 lessons)
  - Quadratic Equations
  - Exponential Equations
  - Polynomial Graphs
  - Non-Polynomial Graphs
- Surface Area and Volume (9 lessons)
  - Surface Area
  - Volume
- Pythagoras and Trigonometry (19 lessons)
  - Defining And trigonometric Functions
  - Trigonometric Rules
  - Area of a Triangle
  - Solving Simple Trigonometric Equations
  - Pythagoras' Theorem and Trigonometry in 3D
- Geometric Reasoning (4 lessons)
- Chance (7 lessons)
- Data Representation and Interpretation (15 lessons)
  - Standard Deviation
  - Bivariate Data
  - Lines of Best Fit

#### Foundation Mathematics

- Area of Study 1 - Space, Shape and Design
  - Shapes, Solids and Angles (12 lessons)
    - Angles
    - Polygons
    - Solids
    - Nets
  - Scale Drawings (5 lessons)

- Right-Angled Triangles (3 lessons)
- Symmetry and Similarity (6 lessons)
- Area of Study 2 - Patterns and Number
  - Calculations (9 lessons)
    - Rounding and Estimation
    - Scientific Notation
  - Substitution (1 lesson)
  - Percentages (6 lessons)
  - Rates (4 lessons)
  - Ratios (2 lessons)
- Area of Study 3 - Data
  - Data Presentation and Interpretation (12 lessons)
  - Classifying Data (1 lesson)
  - Summarising and Interpreting Data (16 lessons)
    - Mean, Median and Mode
    - Shape and Spread in Data
    - Standard Deviation
  - Comparing Data Sets (5 lessons)
  - Cartesian Planes (4 lessons)
  - Using Graphs (5 lessons)
  - Surveys and Sampling (6 lessons)
  - Bivariate Scatterplots (3 lessons)
  - Line of Best Fit (6 lessons)
- Area of Study 4 - Measurement
  - Linear Measure (11 lessons)
  - Area (10 lessons)
  - Volume and Capacity (17 lessons)
  - Surface Area (8 lessons)
  - Mass and Temperature (3 lessons)
  - Time (9 lessons)

#### General Mathematics

- Area of Study 1 - Algebra and Structure
  - Linear Relations (4 lessons)
  - Simultaneous Linear Equations (5 lessons)
- Area of Study 2 - Arithmetic and Number
  - Computational and Practical Arithmetic (21 lessons)
    - Percentages Review
    - Rates Review
    - Rounding and Estimation
    - Scientific Notation
  - Financial Arithmetic (12 lessons)
    - Simple Interest
    - Compound Interest

- Financial Rates
- Area of Study 3 - Discrete Mathematics
  - Matrices (15 lessons)
    - Matrix Fundamentals
    - Matrix Products
    - Writing Information as a Matrix
    - Matrix Equations
    - Transition Matrices
  - Graphs and Networks (6 lessons)
  - Number Patterns and Recursion (6 lessons)
    - Arithmetic Sequences
    - Geometric Sequences
    - The Fibonacci Sequence
- Area of Study 4 - Geometry, Measurement and Trigonometry
  - Shape and Measurement (25 lessons)
    - Perimeter
    - Surface Area
    - Volume
    - Pythagoras' Theorem
  - Applications of Trigonometry (19 lessons)
    - Trigonometry
    - Bearing and Elevation
    - Trigonometric Rules
    - Area of a Triangle
    - Special Triangles
  - Similar Figures and Scale Factors (8 lessons)
    - Similarity
    - Scaling
- Area of Study 5 - Graphs of Linear and Non-Linear Relations
  - Linear Graphs (9 lessons)
    - Modelling Situations: Extended Questions
  - Piece-Wise and Step Graphs (6 lessons)
    - Modelling Situations: Extended Questions
  - Linear Inequalities (4 lessons)
  - Exponentials (2 lessons)
  - Polynomial Graphs (8 lessons)
- Area of Study 6 - Statistics
  - Investigating and Comparing Data Distributions (8 lessons)
    - Shape and Spread in Data
    - Comparing Data Sets
  - Investigating Relationships Between Two Numeric Variables (8 lessons)
    - Scatterplots
    - Linear Modelling

## Further Mathematics

- Area of Study 1 - Unit 3
  - Data Analysis (43 lessons)
    - The Statistical Investigation Process
    - Single Statistical Variable
    - Comparing Data Sets
    - Numerical Association
    - Linear Modelling
    - Time Series
    - Normal Distribution
    - Two-Way Tables
  - Recursion and Financial Modelling (9 lessons)
    - Simple Interest
    - Compound Interest
- Area of Study 2 - Unit 4
  - Geometry and Measurement (33 lessons)
    - Mensuration
    - Pythagoras' Theorem
    - Applications of Trigonometry
    - Spherical Geometry
  - Graphs and Relations (34 lessons)
    - Linear Graphs
    - Piece-Wise and Step Graphs
    - Simultaneous Linear Equations
    - Exponentials
    - Polynomial Graphs
    - Linear Inequalities
  - Matrices (15 lessons)
    - Matrix Fundamentals
    - Matrix Products
    - Writing Information as a Matrix
    - Matrix Equations
    - Transition Matrices
  - Networks and Decision Mathematics (6 lessons)

## Mathematical Methods

- Unit 1
  - Area of Study 1- Functions and Graphs (36 lessons)
    - Linear and Linear Relationships
    - Quadratic Relationships
    - Powers and Polynomials
    - Functions

- Area of Study 2 - Algebra (8 lessons)
  - Equations
  - Polynomial Graphs
- Area of Study 3 - Calculus (5 lessons)
- Area of Study 4 - Probability and Statistics (15 lessons)
  - Language of Events and Sets
  - Fundamentals of Probability
  - Conditional Probability
  - Independence
- Unit 2
  - Area of Study 1 - Functions and Graphs (13 lessons)
    - Trigonometry
    - Defining and Graphing Trigonometric Functions
    - Exponential Functions
  - Area of Study 2 - Algebra (6 lessons)
    - Inverse Proportion
    - Indices and the Index Laws
  - Area of Study 3 - Calculus (22 lessons)
    - Computation of Derivatives
    - Properties of Derivatives
    - Tangents and Normals
    - Stationary Points
    - Anti-Derivatives
  - Area of Study 4 - Probability and Statistics (1 lesson)
- Unit 3 and 4
  - Area of Study 1 - Functions and Graphs (12 lessons)
    - Exponential and Logarithmic Functions
    - Circular Functions
    - Polynomial Graphs
  - Area of Study 2 - Algebra (11 lessons)
    - Simultaneous Equations
    - Inverse and Composite Functions
  - Area of Study 3 - Calculus (38 lessons)
    - Differentiation Rules
    - Exponential and Logarithmic Functions
    - Trigonometric Functions
    - Applications of Differentiation
    - Anti-Differentiation
    - Definite Integrals
    - Applications of Integration
  - Area of Study 4 - Probability and Statistics (19 lessons)
    - General Discrete Random Variables
    - Binomial Distributions
    - Normal Distributions



- Random Sampling

## Specialist Mathematics

- Units 1 and 2
  - Area of Study 1 - Algebra and Structure (15 lessons)
    - Matrix Fundamentals
    - Matrix Products
    - Writing Information as a Matrix
    - Matrix Equations
    - Transition Matrices
  - Area of Study 2 - Arithmetic and Number (30 lessons)
    - Properties of Numbers
    - Sequences
    - Complex Numbers
  - Area of Study 3 - Discrete Mathematics (6 lessons)
  - Area of Study 4 - Geometry, Measurement and Trigonometry (17 lessons)
    - Polygon Angles
    - The Nature of Proof
    - Polygon Properties and their Proofs
    - Circle Properties and their Proofs
  - Area of Study 5 - Graphs of Linear and Non-Linear Relations (4 lessons)
    - Kinematics
    - Graphs of Non-Linear Relations and Functions
  - Area of Study 6 - Statistics (9 lessons)
    - Language of Events and Sets
    - Fundamentals of Probability
    - Binomial Distributions
    - General Discrete Random Variables
- Units 3 and 4
  - Area of Study 2- Algebra (7 lessons)
  - Area of Study 3 - Calculus (7 lessons)
    - Differential Equations
    - Integration Techniques
    - Further Differentiation
  - Area of Study 6 - Probability and Statistics (14 lessons)
    - Normal Distributions
    - Random Sampling

# ACT

## Year 5

- Number and Place Value (7 lessons)
  - Multiples and Factors
- Fractions and Decimals (18 lessons)
  - Proper, Improper and Mixed Fractions
  - Adding and Subtracting Fractions with the Same Denominator
  - Decimals: Tenths, Hundredths and Thousandths
- Money and Financial Mathematics (3 lessons)
  - Budgets and GST
- Patterns and Algebra (6 lessons)
  - Shape Patterns
  - Number Patterns
  - Number Sentences
- Measurement (9 lessons)
  - Length and Perimeter
  - Area and Rectangles
- Time (7 lessons)
  - Recording Time
  - Reading 12 and 24 Hour Time
- Shape (8 lessons)
  - 2D Shapes and Polygons
  - 3D Solids and Nets
- Location and Transformation
  - Locations (3 lessons)
    - Locations
    - Compasses and Scales
    - Routes and Landmarks
  - Transformations (9 lessons)
    - Line Symmetry
    - Rotational Symmetry
    - Enlargement
    - Symmetry on a Grid
- Geometric Reasoning (8 lessons)
  - Common Angles
  - Types of Angle
  - Estimating Angles
- Chance (6 lessons)
  - Likelihood and Probability
  - Outcomes
  - Chance Games
- Data Representation and Interpretation

- Collecting Data (3 lessons)
  - Introduction to Data
  - Collecting Data
- Data Displays (10 lessons)
  - Data Tables and Tally Marks
  - Picture Graphs
  - Dot Plots and Tables
  - Column/Bar Graphs

## Year 6

- Number and Place Value (17 lessons)
  - Integers
  - Arithmetic
  - Properties of Numbers
- Fractions and Decimals (25 lessons)
  - Adding and Subtracting Decimals
  - Multiplying and Dividing Decimals
  - Comparing Fractions
  - Adding and Subtracting Fractions
  - Decimals, Fractions, Percentages
- Money and Financial Mathematics (5 lessons)
- Patterns and Algebra (5 lessons)
  - Patterns
  - Order of Operations
- Measurement (16 lessons)
- Time (5 lessons)
- Shape (6 lessons)
- Location and Transformation (7 lessons)
  - Locations
  - Transformations
- Geometric Reasoning (7 lessons)
- Chance (4 lessons)
- Data Representation and Interpretation (11 lessons)

## Year 7

- Number and Place Value (28 lessons)
  - Arithmetic
  - Integers
  - Associative, Commutative and Distributive Laws
  - Factors and Multiples
  - Prime Numbers and Prime Factors
  - Squares and Square Roots
- Real Numbers (37 lessons)
  - Integers

- Fractions
- Decimals
- Percentages and Ratios
- Converting Between Fractions, Decimals and Fractions
- Money and Financial Mathematics (6 lessons)
- Patterns and Algebra (23 lessons)
  - Introduction to Algebra
  - Substituting and Evaluating Algebraic Expressions
  - Contextualising Algebra
  - Solving Equations
- Linear and Non-Linear Relationships (17 lessons)
  - Cartesian Planes
  - Linear Graphs
  - Solving Linear Equations
- Measurement (16 lessons)
  - Units of Measurement
  - Length
  - Area
  - Volume
- Time (4 lessons)
- Shape (4 lessons)
- Location and Transformation (6 lessons)
  - Symmetry
  - Transformations
- Geometric Reasoning (9 lessons)
  - Points, Lines, and Angles
  - Triangles
  - Quadrilaterals
- Chance (9 lessons)
- Data Representation and Interpretation (18 lessons)
  - Introduction to Data
  - Mean, Median and Mode
  - Displaying Data

#### Year 8

- Number and Place Value (20 lessons)
  - Integers and Rational Numbers
  - Indices
- Real Numbers (11 lessons)
  - Decimals
  - Percentages
  - Irrational Numbers
  - Ratios and Rates
- Money and Financial Mathematics (4 lessons)

- Patterns and Algebra (11 lessons)
  - Expanding
  - Factorising
  - Simplifying
  - Word Problems
- Linear and Non-Linear Relationships (19 lessons)
  - Linear Graphs
  - Solving Linear Equations
- Measurement (24 lessons)
  - Units
  - Perimeter
  - Area
  - Circles
  - Volume
- Time (4 lessons)
- Geometric Reasoning (10 lessons)
  - Congruence and Transformation of Plane Shapes
  - Congruence of Triangles
  - Congruence of Quadrilaterals
  - Applications
- Chance (10 lessons)
  - Complementary Events
  - Chance Tables and Diagrams
- Data Representation and Interpretation (29 lessons)
  - Introduction
  - Mean, Median and Mode
  - Displaying Data
  - Collecting Data
  - Analysing Data

## Year 9

- Real Numbers (20 lessons)
  - Proportion
  - Rates
  - Indices
  - Scientific Notation
- Money and Financial Mathematics (6 lessons)
  - Income and Tax
  - Simple Interest
- Patterns and Algebra (19 lessons)
  - Simplifying and Evaluating Expressions
  - Index Notations with Variables
  - Expanding
  - Factorising

- Linear and Non-Linear Relationships (26 lessons)
  - Coordinate Geometry
  - Linear Graphs and Equations
  - Solving Linear Equations
  - Non-Linear Relationships
- Measurement (19 lessons)
  - Perimeter
  - Area
  - Surface Area
  - Volume and Capacity
- Time (2 lessons)
- Geometric Reasoning (11 lessons)
  - Angles
  - Similarity
  - Scaling
- Pythagoras and Trigonometry (6 lessons)
  - Pythagoras' Theorem
  - Trigonometry
- Chance (12 lessons)
  - Two-Step Experiments
  - Venn Diagrams and Two-Way Tables
  - Experimental Probability
- Data Representation and Interpretation (2 lessons)

#### Year 10

- Money and Financial Mathematics (4 lessons)
- Patterns and Algebra (20 lessons)
  - Expanding and Factorising
  - Algebraic Fractions
  - Using Formulas and Solving Equations
- Linear and Non-Linear Relationships (22 lessons)
  - Parallel and Perpendicular Lines
  - Solving Linear Equations
  - Solving Simultaneous Equations
  - Linear Inequalities
  - Solving Quadratic Equations
  - Non-Linear Graphs
- Surface Area and Volume (11 lessons)
  - Surface Area
  - Volume
- Geometric Reasoning (9 lessons)
  - Geometric Reasoning
  - Proofs
- Pythagoras and Trigonometry (2 lessons)

- Chance (14 lessons)
  - Multi-Step Experiments
  - Conditional Probability
  - Independence
- Data Representation and Interpretation (17 lessons)
  - Box and Whisker Plots
  - Bivariate Data
  - Statistical Reports

#### Year 10A

- Real Numbers (14 lessons)
  - Rational and Irrational Numbers
  - Surds
  - Logarithms
- Patterns and Algebra (9 lessons)
- Linear and Non-Linear Relationships (24 lessons)
  - Quadratic Equations
  - Exponential Equations
  - Polynomial Graphs
  - Non-Polynomial Graphs
- Surface Area and Volume (9 lessons)
  - Surface Area
  - Volume
- Pythagoras and Trigonometry (19 lessons)
  - Defining And trigonometric Functions
  - Trigonometric Rules
  - Area of a Triangle
  - Solving Simple Trigonometric Equations
  - Pythagoras' Theorem and Trigonometry in 3D
- Geometric Reasoning (4 lessons)
- Chance (7 lessons)
- Data Representation and Interpretation (15 lessons)
  - Standard Deviation
  - Bivariate Data
  - Lines of Best Fit

#### Essential Mathematics 11-12

- Unit 1
  - Topic 1: Calculations, Percentages and Rates (19 lessons)
    - Calculations
    - Percentages
    - Rates
  - Topic 2: Measurement (20 lessons)
    - Linear Measure
    - Area

- Volume and Capacity<sup>1</sup>
    - Mass
  - Topic 3: Algebra (1 lesson)
    - Substitution
  - Topic 4: Graphs (7 lessons)
- Unit 2
  - Topic 1: Representing and Comparing Data (27 lessons)
    - Classifying Data
    - Data Presentation and Interpretation
    - Summarising and Interpreting Data
    - Comparing Data Sets
  - Topic 2: Percentages (5 lessons)
    - Simple Interest
  - Topic 3: Rates and Ratios (2 lessons)
    - Ratios
  - Topic 4: Time and Motion (8 lessons)
    - Time
- Unit 3
  - Topic 1: Measurement (18 lessons)
    - Linear Measure
    - Area Measure
    - Volume and Capacity
  - Topic 2: Scales, Plans and Models (26 lessons)
    - Geometry
    - Interpret Scale Drawings
    - Right-Angled Triangles
  - Topic 3: Graphs (9 lessons)
    - Cartesian Planes
    - Using Graphs
  - Topic 4: Data Collection (15 lessons)
    - Census and Surveys
    - Bivariate Scatterplots
    - Line of Best Fit
- Unit 4
  - Topic 1: Probability and Relative Frequency (16 lessons)
    - Probability Expressions
    - Simulations
    - Simple Probabilities
    - Probability Applications
  - Topic 2: Earth Geometry and Time Zones (1 lesson)
    - Time
  - Topic 3: Loans and Compound Interest (11 lessons)
    - Compound Interest
    - Earning Money



- Budgeting
- Tax

## General Mathematics 11-12

- Unit 1
  - Topic 1: Consumer Arithmetic (17 lessons)
    - Percentage Review
    - Rates Review
    - Financial Rates
  - Topic 2: Algebra and Matrices (2 lessons)
    - Linear and Non-Linear Expressions
  - Topic 3: Shape and Measurement (24 lessons)
    - Pythagoras' Theorem
    - Mensuration
    - Similar Figures and Scale Factors
- Unit 2
  - Topic 1: Univariate Data Analysis and the Statistical Investigation Process (21 lessons)
    - The Statistical Investigation Process
    - Single Statistical Variable
    - Comparing Data Sets
  - Topic 2: Applications of Trigonometry (16 lessons)
    - Trigonometric Ratios
    - Trigonometric Rules
    - Area of a Triangle
    - Bearings and Elevation
  - Topic 3: Linear Equations and their Graphs (22 lessons)
    - Linear Equations
    - Straight-Line Graphs and their Applications
    - Simultaneous Linear Equations and their Applications
    - Piece-Wise Linear Graphs and Step Graphs
- Unit 3
  - Topic 1: Bivariate Data Analysis (9 lessons)
    - Numerical Association
    - Linear Modelling
  - Topic 2: Growth and Decay in Sequences (6 lessons)
    - Sequences
  - Topic 3: Graphs and Networks (4 lessons)
    - Networks
- Unit 4
  - Topic 1: Time Series Analysis (2 lessons)
    - Time Series
  - Topic 2: Loans, Investments and Annuities (8 lessons)
    - Simple Interest
    - Compound Interest

- Topic 3: Networks and Decision Mathematics (2 lessons)
  - Networks

## Mathematical Methods 11-12

- Unit 1
  - Topic 1: Functions and Graphs (44 lessons)
    - Linear and Linear Relationships
    - Solving Equations
    - Quadratic Relationships
    - Inverse Proportion
    - Powers and Polynomials
    - Graph of Relations
    - Functions
  - Topic 2: Trigonometric Functions (18 lessons)
    - Trigonometric Rule
    - Area of a Triangle
    - Circular Measure and Radian Measure
    - Trigonometric Functions
    - Solving Simple Trigonometric Equations
  - Topic 3: Counting and Probability (15 lessons)
    - Language of Events and Sets
    - Fundamentals of Probability
    - Conditional Probability
    - Independance
- Unit 2
  - Topic 1: Exponential Functions (6 lessons)
    - Indices and the Index Laws
    - Exponential Functions
  - Topic 2: Arithmetic and Geometric Sequence and Series (19 lessons)
  - Topic 3: Introduction to Differential Calculus (28 lessons +3 EE)
    - Rates of Change
    - The Concept of the Derivative
    - Computation of Derivatives
    - Properties of Derivatives
    - Applications of Derivatives
    - Anti-Derivatives
- Unit 3
  - Topic 1: Further Differentiation and Applications (4 lessons)
    - Exponential Functions
    - Differentiation Rules
    - The Second Derivative and Applications of the Derivative
  - Topic 2: Integrals (25 lessons)
    - Anti-Differentiation
    - Definite Integrals

- Applications of Integration
  - Topic 3: Discrete Random Variables (5 lessons)
    - General Discrete Random Variables
    - Binomial Distributions
- Unit 4
  - Topic 1: The Logarithmic Function (5 lessons)
    - Logarithmic Functions
  - Topic 2: Continuous Random Variables and the Normal Distribution (7 lessons)
    - Normal Distributions
  - Topic 3: Interval Estimates for Proportions (7 lessons)
    - Random Sampling

### Specialist Mathematics 11-12

- Unit 1
  - Topic 3: Geometry (16 lessons)
    - Circle Properties and their Proofs
    - Geometric Proofs Using Vectors
    - The Nature of Proof
- Unit 2
  - Topic 3: Real and Complex Numbers (6 lesson)
    - Complex Numbers
    - Properties of Numbers
    - Roots of Equations
- Unit 3
  - Topic 1: Complex Numbers (7 lessons)
    - Complex Arithmetic Using Polar Form
    - Roots of Complex Numbers
  - Topic 2: Functions and Sketching Graphs (5 lessons)
- Unit 4
  - Topic 1: Integration and Applications of Integrations (1 lesson)
    - Integration Techniques
  - Topic 2: Rates of Change and Differential Equations (6 lessons)
    - Differential Equations
    - Parametric Curves and Implicit Differentiation

# TAS

## Year 5

- Number and Place Value (7 lessons)
  - Multiples and Factors
- Fractions and Decimals (18 lessons)
  - Proper, Improper and Mixed Fractions
  - Adding and Subtracting Fractions with the Same Denominator
  - Decimals: Tenths, Hundredths and Thousandths
- Money and Financial Mathematics (3 lessons)
  - Budgets and GST
- Patterns and Algebra (6 lessons)
  - Shape Patterns
  - Number Patterns
  - Number Sentences
- Measurement (9 lessons)
  - Length and Perimeter
  - Area and Rectangles
- Time (7 lessons)
  - Recording Time
  - Reading 12 and 24 Hour Time
- Shape (8 lessons)
  - 2D Shapes and Polygons
  - 3D Solids and Nets
- Location and Transformation
  - Locations (3 lessons)
    - Locations
    - Compasses and Scales
    - Routes and Landmarks
  - Transformations (9 lessons)
    - Line Symmetry
    - Rotational Symmetry
    - Enlargement
    - Symmetry on a Grid
- Geometric Reasoning (8 lessons)
  - Common Angles
  - Types of Angle
  - Estimating Angles
- Chance (6 lessons)
  - Likelihood and Probability
  - Outcomes
  - Chance Games
- Data Representation and Interpretation

- Collecting Data (3 lessons)
  - Introduction to Data
  - Collecting Data
- Data Displays (10 lessons)
  - Data Tables and Tally Marks
  - Picture Graphs
  - Dot Plots and Tables
  - Column/Bar Graphs

## Year 6

- Number and Place Value (17 lessons)
  - Integers
  - Arithmetic
  - Properties of Numbers
- Fractions and Decimals (25 lessons)
  - Adding and Subtracting Decimals
  - Multiplying and Dividing Decimals
  - Comparing Fractions
  - Adding and Subtracting Fractions
  - Decimals, Fractions, Percentages
- Money and Financial Mathematics (5 lessons)
- Patterns and Algebra (5 lessons)
  - Patterns
  - Order of Operations
- Measurement (16 lessons)
- Time (5 lessons)
- Shape (6 lessons)
- Location and Transformation (7 lessons)
  - Locations
  - Transformations
- Geometric Reasoning (7 lessons)
- Chance (4 lessons)
- Data Representation and Interpretation (11 lessons)

## Year 7

- Number and Place Value (28 lessons)
  - Arithmetic
  - Integers
  - Associative, Commutative and Distributive Laws
  - Factors and Multiples
  - Prime Numbers and Prime Factors
  - Squares and Square Roots
- Real Numbers (37 lessons)
  - Integers

- Fractions
- Decimals
- Percentages and Ratios
- Converting Between Fractions, Decimals and Fractions
- Money and Financial Mathematics (6 lessons)
- Patterns and Algebra (23 lessons)
  - Introduction to Algebra
  - Substituting and Evaluating Algebraic Expressions
  - Contextualising Algebra
  - Solving Equations
- Linear and Non-Linear Relationships (17 lessons)
  - Cartesian Planes
  - Linear Graphs
  - Solving Linear Equations
- Measurement (16 lessons)
  - Units of Measurement
  - Length
  - Area
  - Volume
- Time (4 lessons)
- Shape (4 lessons)
- Location and Transformation (6 lessons)
  - Symmetry
  - Transformations
- Geometric Reasoning (9 lessons)
  - Points, Lines, and Angles
  - Triangles
  - Quadrilaterals
- Chance (9 lessons)
- Data Representation and Interpretation (18 lessons)
  - Introduction to Data
  - Mean, Median and Mode
  - Displaying Data

#### Year 8

- Number and Place Value (20 lessons)
  - Integers and Rational Numbers
  - Indices
- Real Numbers (11 lessons)
  - Decimals
  - Percentages
  - Irrational Numbers
  - Ratios and Rates
- Money and Financial Mathematics (4 lessons)

- Patterns and Algebra (11 lessons)
  - Expanding
  - Factorising
  - Simplifying
  - Word Problems
- Linear and Non-Linear Relationships (19 lessons)
  - Linear Graphs
  - Solving Linear Equations
- Measurement (24 lessons)
  - Units
  - Perimeter
  - Area
  - Circles
  - Volume
- Time (4 lessons)
- Geometric Reasoning (10 lessons)
  - Congruence and Transformation of Plane Shapes
  - Congruence of Triangles
  - Congruence of Quadrilaterals
  - Applications
- Chance (10 lessons)
  - Complementary Events
  - Chance Tables and Diagrams
- Data Representation and Interpretation (29 lessons)
  - Introduction
  - Mean, Median and Mode
  - Displaying Data
  - Collecting Data
  - Analysing Data

## Year 9

- Real Numbers (20 lessons)
  - Proportion
  - Rates
  - Indices
  - Scientific Notation
- Money and Financial Mathematics (6 lessons)
  - Income and Tax
  - Simple Interest
- Patterns and Algebra (19 lessons)
  - Simplifying and Evaluating Expressions
  - Index Notations with Variables
  - Expanding
  - Factorising

- Linear and Non-Linear Relationships (26 lessons)
  - Coordinate Geometry
  - Linear Graphs and Equations
  - Solving Linear Equations
  - Non-Linear Relationships
- Measurement (19 lessons)
  - Perimeter
  - Area
  - Surface Area
  - Volume and Capacity
- Time (2 lessons)
- Geometric Reasoning (11 lessons)
  - Angles
  - Similarity
  - Scaling
- Pythagoras and Trigonometry (6 lessons)
  - Pythagoras' Theorem
  - Trigonometry
- Chance (12 lessons)
  - Two-Step Experiments
  - Venn Diagrams and Two-Way Tables
  - Experimental Probability
- Data Representation and Interpretation (2 lessons)

#### Year 10

- Money and Financial Mathematics (4 lessons)
- Patterns and Algebra (20 lessons)
  - Expanding and Factorising
  - Algebraic Fractions
  - Using Formulas and Solving Equations
- Linear and Non-Linear Relationships (22 lessons)
  - Parallel and Perpendicular Lines
  - Solving Linear Equations
  - Solving Simultaneous Equations
  - Linear Inequalities
  - Solving Quadratic Equations
  - Non-Linear Graphs
- Surface Area and Volume (11 lessons)
  - Surface Area
  - Volume
- Geometric Reasoning (9 lessons)
  - Geometric Reasoning
  - Proofs
- Pythagoras and Trigonometry (2 lessons)



- Chance (14 lessons)
  - Multi-Step Experiments
  - Conditional Probability
  - Independence
- Data Representation and Interpretation (17 lessons)
  - Box and Whisker Plots
  - Bivariate Data
  - Statistical Reports

#### Year 10A

- Real Numbers (14 lessons)
  - Rational and Irrational Numbers
  - Surds
  - Logarithms
- Patterns and Algebra (9 lessons)
- Linear and Non-Linear Relationships (24 lessons)
  - Quadratic Equations
  - Exponential Equations
  - Polynomial Graphs
  - Non-Polynomial Graphs
- Surface Area and Volume (9 lessons)
  - Surface Area
  - Volume
- Pythagoras and Trigonometry (19 lessons)
  - Defining And trigonometric Functions
  - Trigonometric Rules
  - Area of a Triangle
  - Solving Simple Trigonometric Equations
  - Pythagoras' Theorem and Trigonometry in 3D
- Geometric Reasoning (4 lessons)
- Chance (7 lessons)
- Data Representation and Interpretation (15 lessons)
  - Standard Deviation
  - Bivariate Data
  - Lines of Best Fit

#### Essential Mathematics 11-12

- Unit 1
  - Topic 1: Calculations, Percentages and Rates (19 lessons)
    - Calculations
    - Percentages
    - Rates
  - Topic 2: Measurement (20 lessons)
    - Linear Measure

- Area
    - Volume and Capacity<sup>1</sup>
    - Mass
  - Topic 3: Algebra (1 lesson)
    - Substitution
  - Topic 4: Graphs (7 lessons)
- Unit 2
  - Topic 1: Representing and Comparing Data (27 lessons)
    - Classifying Data
    - Data Presentation and Interpretation
    - Summarising and Interpreting Data
    - Comparing Data Sets
  - Topic 2: Percentages (5 lessons)
    - Simple Interest
  - Topic 3: Rates and Ratios (2 lessons)
    - Ratios
  - Topic 4: Time and Motion (8 lessons)
    - Time
- Unit 3
  - Topic 1: Measurement (18 lessons)
    - Linear Measure
    - Area Measure
    - Volume and Capacity
  - Topic 2: Scales, Plans and Models (26 lessons)
    - Geometry
    - Interpret Scale Drawings
    - Right-Angled Triangles
  - Topic 3: Graphs (9 lessons)
    - Cartesian Planes
    - Using Graphs
  - Topic 4: Data Collection (15 lessons)
    - Census and Surveys
    - Bivariate Scatterplots
    - Line of Best Fit
- Unit 4
  - Topic 1: Probability and Relative Frequency (16 lessons)
    - Probability Expressions
    - Simulations
    - Simple Probabilities
    - Probability Applications
  - Topic 2: Earth Geometry and Time Zones (1 lesson)
    - Time
  - Topic 3: Loans and Compound Interest (11 lessons)
    - Compound Interest

- Earning Money
- Budgeting
- Tax

## General Mathematics 11-12

- Unit 1
  - Topic 1: Consumer Arithmetic (17 lessons)
    - Percentage Review
    - Rates Review
    - Financial Rates
  - Topic 2: Algebra and Matrices (2 lessons)
    - Linear and Non-Linear Expressions
  - Topic 3: Shape and Measurement (24 lessons)
    - Pythagoras' Theorem
    - Mensuration
    - Similar Figures and Scale Factors
- Unit 2
  - Topic 1: Univariate Data Analysis and the Statistical Investigation Process (21 lessons)
    - The Statistical Investigation Process
    - Single Statistical Variable
    - Comparing Data Sets
  - Topic 2: Applications of Trigonometry (16 lessons)
    - Trigonometric Ratios
    - Trigonometric Rules
    - Area of a Triangle
    - Bearings and Elevation
  - Topic 3: Linear Equations and their Graphs (22 lessons)
    - Linear Equations
    - Straight-Line Graphs and their Applications
    - Simultaneous Linear Equations and their Applications
    - Piece-Wise Linear Graphs and Step Graphs
- Unit 3
  - Topic 1: Bivariate Data Analysis (9 lessons)
    - Numerical Association
    - Linear Modelling
  - Topic 2: Growth and Decay in Sequences (6 lessons)
    - Sequences
  - Topic 3: Graphs and Networks (4 lessons)
    - Networks
- Unit 4
  - Topic 1: Time Series Analysis (2 lessons)
    - Time Series
  - Topic 2: Loans, Investments and Annuities (8 lessons)
    - Simple Interest

- Compound Interest
- Topic 3: Networks and Decision Mathematics (2 lessons)
  - Networks

## Mathematical Methods 11-12

- Unit 1
  - Topic 1: Functions and Graphs (44 lessons)
    - Linear and Linear Relationships
    - Solving Equations
    - Quadratic Relationships
    - Inverse Proportion
    - Powers and Polynomials
    - Graph of Relations
    - Functions
  - Topic 2: Trigonometric Functions (18 lessons)
    - Trigonometric Rule
    - Area of a Triangle
    - Circular Measure and Radian Measure
    - Trigonometric Functions
    - Solving Simple Trigonometric Equations
  - Topic 3: Counting and Probability (15 lessons)
    - Language of Events and Sets
    - Fundamentals of Probability
    - Conditional Probability
    - Independence
- Unit 2
  - Topic 1: Exponential Functions (6 lessons)
    - Indices and the Index Laws
    - Exponential Functions
  - Topic 2: Arithmetic and Geometric Sequence and Series (19 lessons)
  - Topic 3: Introduction to Differential Calculus (28 lessons +3 EE)
    - Rates of Change
    - The Concept of the Derivative
    - Computation of Derivatives
    - Properties of Derivatives
    - Applications of Derivatives
    - Anti-Derivatives
- Unit 3
  - Topic 1: Further Differentiation and Applications (4 lessons)
    - Exponential Functions
    - Differentiation Rules
    - The Second Derivative and Applications of the Derivative
  - Topic 2: Integrals (25 lessons)
    - Anti-Differentiation

- Definite Integrals
    - Applications of Integration
  - Topic 3: Discrete Random Variables (5 lessons)
    - General Discrete Random Variables
    - Binomial Distributions
- Unit 4
  - Topic 1: The Logarithmic Function (5 lessons)
    - Logarithmic Functions
  - Topic 2: Continuous Random Variables and the Normal Distribution (7 lessons)
    - Normal Distributions
  - Topic 3: Interval Estimates for Proportions (7 lessons)
    - Random Sampling

### Specialist Mathematics 11-12

- Unit 1
  - Topic 3: Geometry (16 lessons)
    - Circle Properties and their Proofs
    - Geometric Proofs Using Vectors
    - The Nature of Proof
- Unit 2
  - Topic 3: Real and Complex Numbers (6 lesson)
    - Complex Numbers
    - Properties of Numbers
    - Roots of Equations
- Unit 3
  - Topic 1: Complex Numbers (7 lessons)
    - Complex Arithmetic Using Polar Form
    - Roots of Complex Numbers
  - Topic 2: Functions and Sketching Graphs (5 lessons)
- Unit 4
  - Topic 1: Integration and Applications of Integrations (1 lesson)
    - Integration Techniques
  - Topic 2: Rates of Change and Differential Equations (6 lessons)
    - Differential Equations
    - Parametric Curves and Implicit Differentiation

# NT

## Year 5

- Number and Place Value (7 lessons)
  - Multiples and Factors
- Fractions and Decimals (18 lessons)
  - Proper, Improper and Mixed Fractions
  - Adding and Subtracting Fractions with the Same Denominator
  - Decimals: Tenths, Hundredths and Thousandths
- Money and Financial Mathematics (3 lessons)
  - Budgets and GST
- Patterns and Algebra (6 lessons)
  - Shape Patterns
  - Number Patterns
  - Number Sentences
- Measurement (9 lessons)
  - Length and Perimeter
  - Area and Rectangles
- Time (7 lessons)
  - Recording Time
  - Reading 12 and 24 Hour Time
- Shape (8 lessons)
  - 2D Shapes and Polygons
  - 3D Solids and Nets
- Location and Transformation
  - Locations (3 lessons)
    - Locations
    - Compasses and Scales
    - Routes and Landmarks
  - Transformations (9 lessons)
    - Line Symmetry
    - Rotational Symmetry
    - Enlargement
    - Symmetry on a Grid
- Geometric Reasoning (8 lessons)
  - Common Angles
  - Types of Angle
  - Estimating Angles
- Chance (6 lessons)
  - Likelihood and Probability
  - Outcomes
  - Chance Games
- Data Representation and Interpretation

- Collecting Data (3 lessons)
  - Introduction to Data
  - Collecting Data
- Data Displays (10 lessons)
  - Data Tables and Tally Marks
  - Picture Graphs
  - Dot Plots and Tables
  - Column/Bar Graphs

## Year 6

- Number and Place Value (17 lessons)
  - Integers
  - Arithmetic
  - Properties of Numbers
- Fractions and Decimals (25 lessons)
  - Adding and Subtracting Decimals
  - Multiplying and Dividing Decimals
  - Comparing Fractions
  - Adding and Subtracting Fractions
  - Decimals, Fractions, Percentages
- Money and Financial Mathematics (5 lessons)
- Patterns and Algebra (5 lessons)
  - Patterns
  - Order of Operations
- Measurement (16 lessons)
- Time (5 lessons)
- Shape (6 lessons)
- Location and Transformation (7 lessons)
  - Locations
  - Transformations
- Geometric Reasoning (7 lessons)
- Chance (4 lessons)
- Data Representation and Interpretation (11 lessons)

## Year 7

- Number and Place Value (28 lessons)
  - Arithmetic
  - Integers
  - Associative, Commutative and Distributive Laws
  - Factors and Multiples
  - Prime Numbers and Prime Factors
  - Squares and Square Roots
- Real Numbers (37 lessons)
  - Integers

- Fractions
- Decimals
- Percentages and Ratios
- Converting Between Fractions, Decimals and Fractions
- Money and Financial Mathematics (6 lessons)
- Patterns and Algebra (23 lessons)
  - Introduction to Algebra
  - Substituting and Evaluating Algebraic Expressions
  - Contextualising Algebra
  - Solving Equations
- Linear and Non-Linear Relationships (17 lessons)
  - Cartesian Planes
  - Linear Graphs
  - Solving Linear Equations
- Measurement (16 lessons)
  - Units of Measurement
  - Length
  - Area
  - Volume
- Time (4 lessons)
- Shape (4 lessons)
- Location and Transformation (6 lessons)
  - Symmetry
  - Transformations
- Geometric Reasoning (9 lessons)
  - Points, Lines, and Angles
  - Triangles
  - Quadrilaterals
- Chance (9 lessons)
- Data Representation and Interpretation (18 lessons)
  - Introduction to Data
  - Mean, Median and Mode
  - Displaying Data

#### Year 8

- Number and Place Value (20 lessons)
  - Integers and Rational Numbers
  - Indices
- Real Numbers (11 lessons)
  - Decimals
  - Percentages
  - Irrational Numbers
  - Ratios and Rates
- Money and Financial Mathematics (4 lessons)



- Patterns and Algebra (11 lessons)
  - Expanding
  - Factorising
  - Simplifying
  - Word Problems
- Linear and Non-Linear Relationships (19 lessons)
  - Linear Graphs
  - Solving Linear Equations
- Measurement (24 lessons)
  - Units
  - Perimeter
  - Area
  - Circles
  - Volume
- Time (4 lessons)
- Geometric Reasoning (10 lessons)
  - Congruence and Transformation of Plane Shapes
  - Congruence of Triangles
  - Congruence of Quadrilaterals
  - Applications
- Chance (10 lessons)
  - Complementary Events
  - Chance Tables and Diagrams
- Data Representation and Interpretation (29 lessons)
  - Introduction
  - Mean, Median and Mode
  - Displaying Data
  - Collecting Data
  - Analysing Data

## Year 9

- Real Numbers (20 lessons)
  - Proportion
  - Rates
  - Indices
  - Scientific Notation
- Money and Financial Mathematics (6 lessons)
  - Income and Tax
  - Simple Interest
- Patterns and Algebra (19 lessons)
  - Simplifying and Evaluating Expressions
  - Index Notations with Variables
  - Expanding
  - Factorising

- Linear and Non-Linear Relationships (26 lessons)
  - Coordinate Geometry
  - Linear Graphs and Equations
  - Solving Linear Equations
  - Non-Linear Relationships
- Measurement (19 lessons)
  - Perimeter
  - Area
  - Surface Area
  - Volume and Capacity
- Time (2 lessons)
- Geometric Reasoning (11 lessons)
  - Angles
  - Similarity
  - Scaling
- Pythagoras and Trigonometry (6 lessons)
  - Pythagoras' Theorem
  - Trigonometry
- Chance (12 lessons)
  - Two-Step Experiments
  - Venn Diagrams and Two-Way Tables
  - Experimental Probability
- Data Representation and Interpretation (2 lessons)

#### Year 10

- Money and Financial Mathematics (4 lessons)
- Patterns and Algebra (20 lessons)
  - Expanding and Factorising
  - Algebraic Fractions
  - Using Formulas and Solving Equations
- Linear and Non-Linear Relationships (22 lessons)
  - Parallel and Perpendicular Lines
  - Solving Linear Equations
  - Solving Simultaneous Equations
  - Linear Inequalities
  - Solving Quadratic Equations
  - Non-Linear Graphs
- Surface Area and Volume (11 lessons)
  - Surface Area
  - Volume
- Geometric Reasoning (9 lessons)
  - Geometric Reasoning
  - Proofs
- Pythagoras and Trigonometry (2 lessons)

- Chance (14 lessons)
  - Multi-Step Experiments
  - Conditional Probability
  - Independence
- Data Representation and Interpretation (17 lessons)
  - Box and Whisker Plots
  - Bivariate Data
  - Statistical Reports

#### Year 10A

- Real Numbers (14 lessons)
  - Rational and Irrational Numbers
  - Surds
  - Logarithms
- Patterns and Algebra (9 lessons)
- Linear and Non-Linear Relationships (24 lessons)
  - Quadratic Equations
  - Exponential Equations
  - Polynomial Graphs
  - Non-Polynomial Graphs
- Surface Area and Volume (9 lessons)
  - Surface Area
  - Volume
- Pythagoras and Trigonometry (19 lessons)
  - Defining And trigonometric Functions
  - Trigonometric Rules
  - Area of a Triangle
  - Solving Simple Trigonometric Equations
  - Pythagoras' Theorem and Trigonometry in 3D
- Geometric Reasoning (4 lessons)
- Chance (7 lessons)
- Data Representation and Interpretation (15 lessons)
  - Standard Deviation
  - Bivariate Data
  - Lines of Best Fit

#### Essential Mathematics Stage 1

- Topic 1: Calculations, Time and Ratios (29 lessons)
  - Calculations
    - Rounding and Estimation
    - Scientific Notation
  - Time
  - Rates
  - Ratios

- Scale Drawings
- Topic 2: Earning and Spending (12 lessons)
  - Earning Money
  - Tax
  - Percentages
  - Budgeting
- Topic 3: Geometry (12 lessons)
  - Shapes
    - Polygons
    - Solids
    - Nets
  - Angle Geometry
- Topic 4: Data in Context (33 lessons)
  - Classifying Data
  - Reading and Interpreting Graphs
  - Drawing Graphs
  - Summarising and Interpreting Data
    - Mean, Median and Mode
    - Shape and Spread in Data
  - Comparing Data Sets
- Topic 5: Measurement (35 lessons)
  - Linear Measure
    - Units of Linear Measure
    - Perimeter
    - Circles
  - Area Measure
  - Mass
  - Volume and Capacity
    - Units of Volume and Capacity
    - Volume
- Topic 6: Investing (10 lessons)
  - Simple Interest
  - Compound Interest

#### Essential Mathematics Stage 2

- Topic 1: Scales, Plans, and Models (9 lessons)
  - Geometry
  - Scale Diagrams
- Topic 2: Measurement (43 lessons)
  - Linear Measure
    - Units of Linear Measure
    - Perimeter
    - Circles
    - Right-Angled Triangles

- Non-Right-Angled Triangles
    - Further Resources
  - Area Measure
    - Metric Units
    - Calculating Area
    - Surface Area
  - Mass, Volume and Capacity
    - Mass
    - Units of Volume and Capacity
    - Volume
- Topic 3: Business Applications (1 lesson)
- Topic 4: Statistics (36 lessons)
  - Sampling from Populations
  - Analysis and Representation of Sets of Data
    - Summarising and Interpreting Data
    - Comparing Data Sets
  - Linear Correlation
    - Bivariate Scatterplots
    - Line of Best Fit
- Topic 5: Investments and Loans (10 lessons)
  - Simple Interest
  - Compound Interest

#### General Mathematics Stage 1

- Topic 1: Investing and Borrowing (10 lessons)
  - Simple Interest
  - Compound Interest
- Topic 2: Measurement (46 lessons)
  - Application of Measuring Devices and Units of Measurement
    - Units of Linear Measure
    - Units of Area Measure
    - Units of Volume and Capacity
    - Rounding and Estimation
    - Scientific Notation
  - Perimeter and Area of Plane Shapes
    - Perimeter
    - Pythagoras' Theorem
    - Area
  - Volume and Surface Area of Solids
    - Surface Area
    - Volume
  - Scale and Rates
    - Scaling
- Topic 3: Statistical Investigation (43 lessons)

- The Statistical Investigation Process
- Sampling and Collecting Data
- Classifying and Organising Data
  - Classifying Data
  - Organising Data
- The Shape, Location and Spread of Distributions of Numerical Data
  - Mean, Median and Mode
  - Shape and Spread in Data
  - Comparing Data Sets
- Topic 4: Applications of Trigonometry (25 lessons)
  - Similarity
  - Trigonometry
  - Bearings and Elevation
  - Trigonometric Rules
  - Area of a Triangle
  - Further Resources
- Topic 5: Linear and Exponential Functions and Their Graphs (16 lessons)
  - Equations
  - Linear Graphs
    - Modelling Situations: Extended Questions
  - Exponentials
- Topic 6: Matrices and Networks (21 lessons)
  - Networks
  - Matrices
    - Matrix Fundamentals
    - Matrix Products
    - Writing Information as a Matrix
    - Matrix Equations
    - Transition Matrices

## General Mathematics Stage 2

- Topic 1: Modelling with Linear Relationships (9 lessons)
  - Simultaneous Linear Equations
  - Linear Inequalities
- Topic 2: Modelling with Matrices (15 lessons)
  - Matrix Fundamentals
  - Matrix Products
  - Writing Information as a Matrix
  - Matrix Equations
  - Transition Matrices
- Topic 3: Statistical Models (16 lessons)
  - Bivariate Statistics
    - Scatter Plots
    - Linear Regressions

- The Normal Distribution
- Topic 4: Financial Models (5 lessons)
  - Models for Saving
    - Compound Interest
  - Models for Borrowing
- Topic 5: Discrete Models (6 lessons)
  - Networks

### Mathematical Methods

- Topic 1: Further Differentiation and Applications (35 lessons)
  - Introductory Differential Calculus
    - Computation of Derivatives
    - Properties of Derivatives
    - Applications of Derivative
  - Differentiation Rules
  - Exponential Functions
  - Trigonometric Functions
  - Mixed Differentiation Techniques
  - The Second Derivative and Applications of Differentiation
- Topic 2: Discrete Random Variables (5 lessons)
  - General Discrete Random Variables
  - Repeated Bernoulli Trials and the Binomial Distribution
- Topic 3: Integral Calculus (25 lessons)
  - Anti-Differentiation
  - Area Under Curves
  - Fundamental Theorem of Calculus
- Topic 4: Logarithmic Functions (7 lessons)
  - Exponential Functions
  - Logarithmic Functions
- Topic 5: Continuous Random Variables and the Normal Distribution (14 lessons)
  - Normal Distributions
- Random Sampling

### Mathematics

- Topic 1: Functions and Graphs (19 lessons)
  - Linear and Linear Relationships
    - Modelling Situations: Extended Situations
    - Simultaneous Equations
  - Inverse Proportion
  - Relations
  - Functions
- Topic 2: Polynomials (25 lessons)
  - Quadratic Relationships
    - Polynomials

- Equations
  - Cubic and Quartic Polynomials
    - Equations
    - Graphs
- Topic 3: Trigonometry (32 lessons)
  - Cosine and Sine Rules
    - Pythagoras' Theorem
    - Trigonometric Ratios
    - Trigonometric Rules
    - Area of a Triangle
    - Further Resources
  - Circular Measure and Radian Measure
    - Defining and Graphing Trigonometric Functions
    - Arcs, Sectors and Segments
- Topic 4: Counting and Statistics (15 lessons)
  - Discrete and Continuous Random Data
    - General Discrete Random Variables
    - Binomial Distributions
  - Samples and Statistical Measures
    - Standard Deviation
  - Normal Distributions
- Topic 5: Growth and Decay (9 lessons)
  - Indices and the Index Laws
  - Exponential Functions
  - Logarithmic Functions
- Topic 6: Introduction to Differential Calculus (31 lessons)
  - Rate of Change
  - The Concept of the Derivative
  - Computation of Derivatives
  - Properties of Derivatives
  - Applications of Derivative
    - Tangents and Normals
    - Stationary Points
    - Extended Investigations
- Topic 7: Arithmetic and Geometric Sequences and Series (18 lessons)
  - Arithmetic Sequences and Series
  - Geometric Sequences and Serie
  - Mixed Sequences and Series
- Topic 8: Geometry
  - Circle Properties and their Proofs (10 lessons)
    - Angle Theorems for Circles
    - Chord Properties
- Topic 9: Vectors in the Plane (4 lessons)
  - Geometric Proofs Using Vectors



- Topic 11: Matrices (15 lessons)
  - Matrix Fundamentals
  - Matrix Products
  - Writing Information as a Matrix
  - Matrix Equations
  - Transition Matrices
- Topic 12: Real and Complex Numbers (7 lessons)
  - The Number Line
  - Complex Numbers
  - Roots of Equations

### Specialist Mathematics

- Topic 2: Complex Numbers (12 lessons)
- Topic 3: Functions and Sketching Graphs (5 lessons)
- Topic 4: Vectors in Three Dimensions (15 lessons)
  - Matrix Fundamentals
  - Matrix Products
  - Writing Information as a Matrix
  - Matrix Equations
  - Transition Matrices
- Topic 5: Integration Techniques and Applications (8 lessons)
  - Integration Techniques
  - Applications of Integral Calculus
    - Area Under Curves
    - Numerical Methods
- Topic 6: Rates of Change and Differential Equations (6 lessons)
  - Differential Equations
  - Parametric Curves and Implicit Differentiation

# SA

## Year 5

- Number and Place Value (7 lessons)
  - Multiples and Factors
- Fractions and Decimals (18 lessons)
  - Proper, Improper and Mixed Fractions
  - Adding and Subtracting Fractions with the Same Denominator
  - Decimals: Tenths, Hundredths and Thousandths
- Money and Financial Mathematics (3 lessons)
  - Budgets and GST
- Patterns and Algebra (6 lessons)
  - Shape Patterns
  - Number Patterns
  - Number Sentences
- Measurement (9 lessons)
  - Length and Perimeter
  - Area and Rectangles
- Time (7 lessons)
  - Recording Time
  - Reading 12 and 24 Hour Time
- Shape (8 lessons)
  - 2D Shapes and Polygons
  - 3D Solids and Nets
- Location and Transformation
  - Locations (3 lessons)
    - Locations
    - Compasses and Scales
    - Routes and Landmarks
  - Transformations (9 lessons)
    - Line Symmetry
    - Rotational Symmetry
    - Enlargement
    - Symmetry on a Grid
- Geometric Reasoning (8 lessons)
  - Common Angles
  - Types of Angle
  - Estimating Angles
- Chance (6 lessons)
  - Likelihood and Probability
  - Outcomes
  - Chance Games
- Data Representation and Interpretation

- Collecting Data (3 lessons)
  - Introduction to Data
  - Collecting Data
- Data Displays (10 lessons)
  - Data Tables and Tally Marks
  - Picture Graphs
  - Dot Plots and Tables
  - Column/Bar Graphs

## Year 6

- Number and Place Value (17 lessons)
  - Integers
  - Arithmetic
  - Properties of Numbers
- Fractions and Decimals (25 lessons)
  - Adding and Subtracting Decimals
  - Multiplying and Dividing Decimals
  - Comparing Fractions
  - Adding and Subtracting Fractions
  - Decimals, Fractions, Percentages
- Money and Financial Mathematics (5 lessons)
- Patterns and Algebra (5 lessons)
  - Patterns
  - Order of Operations
- Measurement (16 lessons)
- Time (5 lessons)
- Shape (6 lessons)
- Location and Transformation (7 lessons)
  - Locations
  - Transformations
- Geometric Reasoning (7 lessons)
- Chance (4 lessons)
- Data Representation and Interpretation (11 lessons)

## Year 7

- Number and Place Value (28 lessons)
  - Arithmetic
  - Integers
  - Associative, Commutative and Distributive Laws
  - Factors and Multiples
  - Prime Numbers and Prime Factors
  - Squares and Square Roots
- Real Numbers (37 lessons)
  - Integers

- Fractions
- Decimals
- Percentages and Ratios
- Converting Between Fractions, Decimals and Fractions
- Money and Financial Mathematics (6 lessons)
- Patterns and Algebra (23 lessons)
  - Introduction to Algebra
  - Substituting and Evaluating Algebraic Expressions
  - Contextualising Algebra
  - Solving Equations
- Linear and Non-Linear Relationships (17 lessons)
  - Cartesian Planes
  - Linear Graphs
  - Solving Linear Equations
- Measurement (16 lessons)
  - Units of Measurement
  - Length
  - Area
  - Volume
- Time (4 lessons)
- Shape (4 lessons)
- Location and Transformation (6 lessons)
  - Symmetry
  - Transformations
- Geometric Reasoning (9 lessons)
  - Points, Lines, and Angles
  - Triangles
  - Quadrilaterals
- Chance (9 lessons)
- Data Representation and Interpretation (18 lessons)
  - Introduction to Data
  - Mean, Median and Mode
  - Displaying Data

#### Year 8

- Number and Place Value (20 lessons)
  - Integers and Rational Numbers
  - Indices
- Real Numbers (11 lessons)
  - Decimals
  - Percentages
  - Irrational Numbers
  - Ratios and Rates
- Money and Financial Mathematics (4 lessons)

- Patterns and Algebra (11 lessons)
  - Expanding
  - Factorising
  - Simplifying
  - Word Problems
- Linear and Non-Linear Relationships (19 lessons)
  - Linear Graphs
  - Solving Linear Equations
- Measurement (24 lessons)
  - Units
  - Perimeter
  - Area
  - Circles
  - Volume
- Time (4 lessons)
- Geometric Reasoning (10 lessons)
  - Congruence and Transformation of Plane Shapes
  - Congruence of Triangles
  - Congruence of Quadrilaterals
  - Applications
- Chance (10 lessons)
  - Complementary Events
  - Chance Tables and Diagrams
- Data Representation and Interpretation (29 lessons)
  - Introduction
  - Mean, Median and Mode
  - Displaying Data
  - Collecting Data
  - Analysing Data

## Year 9

- Real Numbers (20 lessons)
  - Proportion
  - Rates
  - Indices
  - Scientific Notation
- Money and Financial Mathematics (6 lessons)
  - Income and Tax
  - Simple Interest
- Patterns and Algebra (19 lessons)
  - Simplifying and Evaluating Expressions
  - Index Notations with Variables
  - Expanding
  - Factorising

- Linear and Non-Linear Relationships (26 lessons)
  - Coordinate Geometry
  - Linear Graphs and Equations
  - Solving Linear Equations
  - Non-Linear Relationships
- Measurement (19 lessons)
  - Perimeter
  - Area
  - Surface Area
  - Volume and Capacity
- Time (2 lessons)
- Geometric Reasoning (11 lessons)
  - Angles
  - Similarity
  - Scaling
- Pythagoras and Trigonometry (6 lessons)
  - Pythagoras' Theorem
  - Trigonometry
- Chance (12 lessons)
  - Two-Step Experiments
  - Venn Diagrams and Two-Way Tables
  - Experimental Probability
- Data Representation and Interpretation (2 lessons)

#### Year 10

- Money and Financial Mathematics (4 lessons)
- Patterns and Algebra (20 lessons)
  - Expanding and Factorising
  - Algebraic Fractions
  - Using Formulas and Solving Equations
- Linear and Non-Linear Relationships (22 lessons)
  - Parallel and Perpendicular Lines
  - Solving Linear Equations
  - Solving Simultaneous Equations
  - Linear Inequalities
  - Solving Quadratic Equations
  - Non-Linear Graphs
- Surface Area and Volume (11 lessons)
  - Surface Area
  - Volume
- Geometric Reasoning (9 lessons)
  - Geometric Reasoning
  - Proofs
- Pythagoras and Trigonometry (2 lessons)

- Chance (14 lessons)
  - Multi-Step Experiments
  - Conditional Probability
  - Independence
- Data Representation and Interpretation (17 lessons)
  - Box and Whisker Plots
  - Bivariate Data
  - Statistical Reports

#### Year 10A

- Real Numbers (14 lessons)
  - Rational and Irrational Numbers
  - Surds
  - Logarithms
- Patterns and Algebra (9 lessons)
- Linear and Non-Linear Relationships (24 lessons)
  - Quadratic Equations
  - Exponential Equations
  - Polynomial Graphs
  - Non-Polynomial Graphs
- Surface Area and Volume (9 lessons)
  - Surface Area
  - Volume
- Pythagoras and Trigonometry (19 lessons)
  - Defining And trigonometric Functions
  - Trigonometric Rules
  - Area of a Triangle
  - Solving Simple Trigonometric Equations
  - Pythagoras' Theorem and Trigonometry in 3D
- Geometric Reasoning (4 lessons)
- Chance (7 lessons)
- Data Representation and Interpretation (15 lessons)
  - Standard Deviation
  - Bivariate Data
  - Lines of Best Fit

#### Essential Mathematics Stage 1

- Topic 1: Calculations, Time and Ratios (29 lessons)
  - Calculations
    - Rounding and Estimation
    - Scientific Notation
  - Time
  - Rates
  - Ratios

- Scale Drawings
- Topic 2: Earning and Spending (12 lessons)
  - Earning Money
  - Tax
  - Percentages
  - Budgeting
- Topic 3: Geometry (12 lessons)
  - Shapes
    - Polygons
    - Solids
    - Nets
  - Angle Geometry
- Topic 4: Data in Context (33 lessons)
  - Classifying Data
  - Reading and Interpreting Graphs
  - Drawing Graphs
  - Summarising and Interpreting Data
    - Mean, Median and Mode
    - Shape and Spread in Data
  - Comparing Data Sets
- Topic 5: Measurement (35 lessons)
  - Linear Measure
    - Units of Linear Measure
    - Perimeter
    - Circles
  - Area Measure
  - Mass
  - Volume and Capacity
    - Units of Volume and Capacity
    - Volume
- Topic 6: Investing (10 lessons)
  - Simple Interest
  - Compound Interest

#### Essential Mathematics Stage 2

- Topic 1: Scales, Plans, and Models (9 lessons)
  - Geometry
  - Scale Diagrams
- Topic 2: Measurement (43 lessons)
  - Linear Measure
    - Units of Linear Measure
    - Perimeter
    - Circles
    - Right-Angled Triangles



- Non-Right-Angled Triangles
    - Further Resources
  - Area Measure
    - Metric Units
    - Calculating Area
    - Surface Area
  - Mass, Volume and Capacity
    - Mass
    - Units of Volume and Capacity
    - Volume
- Topic 3: Business Applications (1 lesson)
- Topic 4: Statistics (36 lessons)
  - Sampling from Populations
  - Analysis and Representation of Sets of Data
    - Summarising and Interpreting Data
    - Comparing Data Sets
  - Linear Correlation
    - Bivariate Scatterplots
    - Line of Best Fit
- Topic 5: Investments and Loans (10 lessons)
  - Simple Interest
  - Compound Interest

#### General Mathematics Stage 1

- Topic 1: Investing and Borrowing (10 lessons)
  - Simple Interest
  - Compound Interest
- Topic 2: Measurement (46 lessons)
  - Application of Measuring Devices and Units of Measurement
    - Units of Linear Measure
    - Units of Area Measure
    - Units of Volume and Capacity
    - Rounding and Estimation
    - Scientific Notation
  - Perimeter and Area of Plane Shapes
    - Perimeter
    - Pythagoras' Theorem
    - Area
  - Volume and Surface Area of Solids
    - Surface Area
    - Volume
  - Scale and Rates
    - Scaling
- Topic 3: Statistical Investigation (43 lessons)

- The Statistical Investigation Process
- Sampling and Collecting Data
- Classifying and Organising Data
  - Classifying Data
  - Organising Data
- The Shape, Location and Spread of Distributions of Numerical Data
  - Mean, Median and Mode
  - Shape and Spread in Data
  - Comparing Data Sets
- Topic 4: Applications of Trigonometry (25 lessons)
  - Similarity
  - Trigonometry
  - Bearings and Elevation
  - Trigonometric Rules
  - Area of a Triangle
  - Further Resources
- Topic 5: Linear and Exponential Functions and Their Graphs (16 lessons)
  - Equations
  - Linear Graphs
    - Modelling Situations: Extended Questions
  - Exponentials
- Topic 6: Matrices and Networks (21 lessons)
  - Networks
  - Matrices
    - Matrix Fundamentals
    - Matrix Products
    - Writing Information as a Matrix
    - Matrix Equations
    - Transition Matrices

## General Mathematics Stage 2

- Topic 1: Modelling with Linear Relationships (9 lessons)
  - Simultaneous Linear Equations
  - Linear Inequalities
- Topic 2: Modelling with Matrices (15 lessons)
  - Matrix Fundamentals
  - Matrix Products
  - Writing Information as a Matrix
  - Matrix Equations
  - Transition Matrices
- Topic 3: Statistical Models (16 lessons)
  - Bivariate Statistics
    - Scatter Plots
    - Linear Regressions

- The Normal Distribution
- Topic 4: Financial Models (5 lessons)
  - Models for Saving
    - Compound Interest
  - Models for Borrowing
- Topic 5: Discrete Models (6 lessons)
  - Networks

### Mathematical Methods

- Topic 1: Further Differentiation and Applications (35 lessons)
  - Introductory Differential Calculus
    - Computation of Derivatives
    - Properties of Derivatives
    - Applications of Derivative
  - Differentiation Rules
  - Exponential Functions
  - Trigonometric Functions
  - Mixed Differentiation Techniques
  - The Second Derivative and Applications of Differentiation
- Topic 2: Discrete Random Variables (5 lessons)
  - General Discrete Random Variables
  - Repeated Bernoulli Trials and the Binomial Distribution
- Topic 3: Integral Calculus (25 lessons)
  - Anti-Differentiation
  - Area Under Curves
  - Fundamental Theorem of Calculus
- Topic 4: Logarithmic Functions (7 lessons)
  - Exponential Functions
  - Logarithmic Functions
- Topic 5: Continuous Random Variables and the Normal Distribution (14 lessons)
  - Normal Distributions
- Random Sampling

### Mathematics

- Topic 1: Functions and Graphs (19 lessons)
  - Linear and Linear Relationships
    - Modelling Situations: Extended Situations
    - Simultaneous Equations
  - Inverse Proportion
  - Relations
  - Functions
- Topic 2: Polynomials (25 lessons)
  - Quadratic Relationships
    - Polynomials

- Equations
  - Cubic and Quartic Polynomials
    - Equations
    - Graphs
- Topic 3: Trigonometry (32 lessons)
  - Cosine and Sine Rules
    - Pythagoras' Theorem
    - Trigonometric Ratios
    - Trigonometric Rules
    - Area of a Triangle
    - Further Resources
  - Circular Measure and Radian Measure
    - Defining and Graphing Trigonometric Functions
    - Arcs, Sectors and Segments
- Topic 4: Counting and Statistics (15 lessons)
  - Discrete and Continuous Random Data
    - General Discrete Random Variables
    - Binomial Distributions
  - Samples and Statistical Measures
    - Standard Deviation
  - Normal Distributions
- Topic 5: Growth and Decay (9 lessons)
  - Indices and the Index Laws
  - Exponential Functions
  - Logarithmic Functions
- Topic 6: Introduction to Differential Calculus (31 lessons)
  - Rate of Change
  - The Concept of the Derivative
  - Computation of Derivatives
  - Properties of Derivatives
  - Applications of Derivative
    - Tangents and Normals
    - Stationary Points
    - Extended Investigations
- Topic 7: Arithmetic and Geometric Sequences and Series (18 lessons)
  - Arithmetic Sequences and Series
  - Geometric Sequences and Serie
  - Mixed Sequences and Series
- Topic 8: Geometry
  - Circle Properties and their Proofs (10 lessons)
    - Angle Theorems for Circles
    - Chord Properties
- Topic 9: Vectors in the Plane (4 lessons)
  - Geometric Proofs Using Vectors

- Topic 11: Matrices (15 lessons)
  - Matrix Fundamentals
  - Matrix Products
  - Writing Information as a Matrix
  - Matrix Equations
  - Transition Matrices
- Topic 12: Real and Complex Numbers (7 lessons)
  - The Number Line
  - Complex Numbers
  - Roots of Equations

### Specialist Mathematics

- Topic 2: Complex Numbers (12 lessons)
- Topic 3: Functions and Sketching Graphs (5 lessons)
- Topic 4: Vectors in Three Dimensions (15 lessons)
  - Matrix Fundamentals
  - Matrix Products
  - Writing Information as a Matrix
  - Matrix Equations
  - Transition Matrices
- Topic 5: Integration Techniques and Applications (8 lessons)
  - Integration Techniques
  - Applications of Integral Calculus
    - Area Under Curves
    - Numerical Methods
- Topic 6: Rates of Change and Differential Equations (6 lessons)
  - Differential Equations
  - Parametric Curves and IMPLICIT Differentiation

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## Year 5

- Number and Place Value (7 lessons)
  - Multiples and Factors
- Fractions and Decimals (18 lessons)
  - Proper, Improper and Mixed Fractions
  - Adding and Subtracting Fractions with the Same Denominator
  - Decimals: Tenths, Hundredths and Thousandths
- Money and Financial Mathematics (3 lessons)
  - Budgets and GST
- Patterns and Algebra (6 lessons)
  - Shape Patterns
  - Number Patterns
  - Number Sentences
- Measurement (9 lessons)
  - Length and Perimeter
  - Area and Rectangles
- Time (7 lessons)
  - Recording Time
  - Reading 12 and 24 Hour Time
- Shape (8 lessons)
  - 2D Shapes and Polygons
  - 3D Solids and Nets
- Location and Transformation
  - Locations (3 lessons)
    - Locations
    - Compasses and Scales
    - Routes and Landmarks
  - Transformations (9 lessons)
    - Line Symmetry
    - Rotational Symmetry
    - Enlargement
    - Symmetry on a Grid
- Geometric Reasoning (8 lessons)
  - Common Angles
  - Types of Angle
  - Estimating Angles
- Chance (6 lessons)
  - Likelihood and Probability
  - Outcomes
  - Chance Games
- Data Representation and Interpretation

- Collecting Data (3 lessons)
  - Introduction to Data
  - Collecting Data
- Data Displays (10 lessons)
  - Data Tables and Tally Marks
  - Picture Graphs
  - Dot Plots and Tables
  - Column/Bar Graphs

## Year 6

- Number and Place Value (17 lessons)
  - Integers
  - Arithmetic
  - Properties of Numbers
- Fractions and Decimals (25 lessons)
  - Adding and Subtracting Decimals
  - Multiplying and Dividing Decimals
  - Comparing Fractions
  - Adding and Subtracting Fractions
  - Decimals, Fractions, Percentages
- Money and Financial Mathematics (5 lessons)
- Patterns and Algebra (5 lessons)
  - Patterns
  - Order of Operations
- Measurement (16 lessons)
- Time (5 lessons)
- Shape (6 lessons)
- Location and Transformation (7 lessons)
  - Locations
  - Transformations
- Geometric Reasoning (7 lessons)
- Chance (4 lessons)
- Data Representation and Interpretation (11 lessons)

## Year 7

- Number and Place Value (28 lessons)
  - Arithmetic
  - Integers
  - Associative, Commutative and Distributive Laws
  - Factors and Multiples
  - Prime Numbers and Prime Factors
  - Squares and Square Roots
- Real Numbers (37 lessons)
  - Integers

- Fractions
- Decimals
- Percentages and Ratios
- Converting Between Fractions, Decimals and Fractions
- Money and Financial Mathematics (6 lessons)
- Patterns and Algebra (23 lessons)
  - Introduction to Algebra
  - Substituting and Evaluating Algebraic Expressions
  - Contextualising Algebra
  - Solving Equations
- Linear and Non-Linear Relationships (17 lessons)
  - Cartesian Planes
  - Linear Graphs
  - Solving Linear Equations
- Measurement (16 lessons)
  - Units of Measurement
  - Length
  - Area
  - Volume
- Time (4 lessons)
- Shape (4 lessons)
- Location and Transformation (6 lessons)
  - Symmetry
  - Transformations
- Geometric Reasoning (9 lessons)
  - Points, Lines, and Angles
  - Triangles
  - Quadrilaterals
- Chance (9 lessons)
- Data Representation and Interpretation (18 lessons)
  - Introduction to Data
  - Mean, Median and Mode
  - Displaying Data

#### Year 8

- Number and Place Value (20 lessons)
  - Integers and Rational Numbers
  - Indices
- Real Numbers (11 lessons)
  - Decimals
  - Percentages
  - Irrational Numbers
  - Ratios and Rates
- Money and Financial Mathematics (4 lessons)



- Patterns and Algebra (11 lessons)
  - Expanding
  - Factorising
  - Simplifying
  - Word Problems
- Linear and Non-Linear Relationships (19 lessons)
  - Linear Graphs
  - Solving Linear Equations
- Measurement (24 lessons)
  - Units
  - Perimeter
  - Area
  - Circles
  - Volume
- Time (4 lessons)
- Geometric Reasoning (10 lessons)
  - Congruence and Transformation of Plane Shapes
  - Congruence of Triangles
  - Congruence of Quadrilaterals
  - Applications
- Chance (10 lessons)
  - Complementary Events
  - Chance Tables and Diagrams
- Data Representation and Interpretation (29 lessons)
  - Introduction
  - Mean, Median and Mode
  - Displaying Data
  - Collecting Data
  - Analysing Data

## Year 9

- Real Numbers (20 lessons)
  - Proportion
  - Rates
  - Indices
  - Scientific Notation
- Money and Financial Mathematics (6 lessons)
  - Income and Tax
  - Simple Interest
- Patterns and Algebra (19 lessons)
  - Simplifying and Evaluating Expressions
  - Index Notations with Variables
  - Expanding
  - Factorising

- Linear and Non-Linear Relationships (26 lessons)
  - Coordinate Geometry
  - Linear Graphs and Equations
  - Solving Linear Equations
  - Non-Linear Relationships
- Measurement (19 lessons)
  - Perimeter
  - Area
  - Surface Area
  - Volume and Capacity
- Time (2 lessons)
- Geometric Reasoning (11 lessons)
  - Angles
  - Similarity
  - Scaling
- Pythagoras and Trigonometry (6 lessons)
  - Pythagoras' Theorem
  - Trigonometry
- Chance (12 lessons)
  - Two-Step Experiments
  - Venn Diagrams and Two-Way Tables
  - Experimental Probability
- Data Representation and Interpretation (2 lessons)

#### Year 10

- Money and Financial Mathematics (4 lessons)
- Patterns and Algebra (20 lessons)
  - Expanding and Factorising
  - Algebraic Fractions
  - Using Formulas and Solving Equations
- Linear and Non-Linear Relationships (22 lessons)
  - Parallel and Perpendicular Lines
  - Solving Linear Equations
  - Solving Simultaneous Equations
  - Linear Inequalities
  - Solving Quadratic Equations
  - Non-Linear Graphs
- Surface Area and Volume (11 lessons)
  - Surface Area
  - Volume
- Geometric Reasoning (9 lessons)
  - Geometric Reasoning
  - Proofs
- Pythagoras and Trigonometry (2 lessons)

- Chance (14 lessons)
  - Multi-Step Experiments
  - Conditional Probability
  - Independence
- Data Representation and Interpretation (17 lessons)
  - Box and Whisker Plots
  - Bivariate Data
  - Statistical Reports

#### Year 10A

- Real Numbers (14 lessons)
  - Rational and Irrational Numbers
  - Surds
  - Logarithms
- Patterns and Algebra (9 lessons)
- Linear and Non-Linear Relationships (24 lessons)
  - Quadratic Equations
  - Exponential Equations
  - Polynomial Graphs
  - Non-Polynomial Graphs
- Surface Area and Volume (9 lessons)
  - Surface Area
  - Volume
- Pythagoras and Trigonometry (19 lessons)
  - Defining And trigonometric Functions
  - Trigonometric Rules
  - Area of a Triangle
  - Solving Simple Trigonometric Equations
  - Pythagoras' Theorem and Trigonometry in 3D
- Geometric Reasoning (4 lessons)
- Chance (7 lessons)
- Data Representation and Interpretation (15 lessons)
  - Standard Deviation
  - Bivariate Data
  - Lines of Best Fit

#### Essential Mathematics

- Unit 1
  - Topic 1.1: Basic Calculations, Percentages and Rates (20 lessons)
    - Checking and Making Sense of All Calculations
    - Basic Calculations
    - Percentages
    - Rates
  - Topic 1.2: Using Formulas for Practical Purposes (2 lessons)

- Topic 1.2: Measurement (23 lessons)
  - Linear Measure
    - Units of Linear Measure
    - Perimeter
  - Area Measure
  - Mass
  - Volume and Capacity
    - Units of Volume and Capacity
    - Volume
- Topic 1.4: Graphs (14 lessons)
  - Reading and Interpreting Graphs
  - Drawing Graphs
- Unit 2
  - Topic 2.1: Representing and Comparing Data (16 lessons)
    - Classifying Data
    - Summarising and Interpreting Data
      - Mean, Median and Mode
      - Shape and Spread in Data
    - Comparing Data Sets
  - Topic 2.2: Percentages (5 lessons)
  - Topic 2.3: Rates and Ratios (5 lessons)
    - Ratios
    - Rates
  - Topic 2.4: Time and Motion (9 lessons)
- Unit 3
  - Topic 3.1: Measurement (16 lessons)
    - Linear Measure
    - Area Measure
    - Volume and Capacity
  - Topic 3.2: Scales, Plans and Models (23 lessons)
    - Geometry
      - Angles
      - Polygons
      - Solids
      - Nets
    - Scale Drawings
    - Right-Angled Triangles
      - Pythagoras' Theorem
      - Trigonometry
      - Elevation
  - Topic 3.3: Graphs in Practical Situations (8 lessons)
    - Cartesian Planes
    - Using Graphs
  - Topic 3.4: Data Collection (24 lessons)

- Surveys and Sampling
  - The Statistical Investigation Process
  - Bivariate Scatter Plots
  - Trend Lines
- Unit 4
  - Topic 4.1: Probability and Relative Frequencies (16 lessons)
    - Probability Expressions
    - Simulations
    - Simple Probabilities
    - Probability Applications
  - Topic 4.2: Earth Geometry and Time Zones (2 lessons)
  - Topic 4.3: Loans and Compound Interest (5 lessons)

## Mathematics Applications

- Unit 1
  - Topic 1.1: Consumer Arithmetic (4 lessons)
  - Topic 1.2: Algebra and Matrices (17 lessons)
    - Linear and Non-Linear Expressions
    - Matrices and Matrix Arithmetic
      - Matrix Fundamentals
      - Matrix Products
      - Writing Information as a Matrix
      - Matrix Equations
      - Transition Matrices
  - Topic 1.3: Shape and Measurement (24 lessons)
    - Pythagoras' Theorem
    - Mensuration
      - Surface Area
      - Volume
      - Perimeter
    - Similar Figures and Scale Factors
      - Similarity
      - Scaling
- Unit 2
  - Topic 2.1: Univariate Data Analysis and the Statistical Investigation Process (23 lessons)
    - The Statistical Investigation Process
    - Single Statistical Variables
      - Standard Deviation
      - Shape and Spread in Data
    - Comparing Data Sets
  - Topic 2.2: Applications of Trigonometry (13 lessons)
    - Trigonometric Ratios
    - Bearings and Elevation
    - Trigonometric Rules

- Area of a Triangle
  - Topic 2.3: Linear Equations and Their Graphs (16 lessons)
    - Linear Equations
    - Linear Graphs
    - Simultaneous Linear Equations
    - Piecewise and Step Graphs
- Unit 3
  - Topic 3.1: Bivariate Data Analysis (9 lessons)
    - Numerical Association
    - Linear Modelling
  - Topic 3.2: Growth and Decay in Sequences (8 lessons)
  - Topic 3.3: Graphs and Networks (5 lessons)
- Unit 4
  - Topic 4.1: Time Series Analysis (2 lessons)
  - Topic 4.2: Loans, Investments and Annuities (4 lessons)
  - Topic 4.3: Networks and Decision Mathematics (1 lesson)

## Mathematical Methods

- Unit 1
  - Topic 1.1: Functions and Graphs (50 lessons)
    - Linear and Linear Relationships
    - Solving Equations
      - Linear Equations
      - Simultaneous Equations
    - Quadratic Relationships
      - Parabolas
      - Equations
    - Inverse Proportion
    - Powers and Polynomials
      - Equations
      - Graphs
    - Graphs of Relations
    - Functions
      - Functions
      - Piecewise and Step Graphs
  - Topic 1.2: Trigonometric Functions (18 lessons)
    - Trigonometric Rules
    - Area of a Triangle
    - Circular measure and Radian Measure
    - Defining and Graphing Trigonometric Functions
    - Solving Simple Trigonometric Equations
  - Topic 1.3: Counting and Probability (15 lessons)
    - Language of Events and Sets
    - Fundamentals of Probability

- Conditional Probability
    - Independence
- Unit 2
  - Topic 2.1: Exponential Functions (6 lessons)
    - Indices and the Index Laws
    - Exponential Functions
  - Topic 2.2: Arithmetic and Geometric Sequences and Series (17 lessons)
  - Topic 2.3: Introduction to Differential Calculus (27 lessons)
    - Rates of Change
    - The Concept of the Derivative
    - Computation of Derivatives
    - Properties of Derivatives
    - Applications of Derivatives
      - Tangents and Normals
      - Kinematics
      - Stationary Points
      - Optimisation
    - Anti-Derivatives
- Unit 3
  - Topic 3.1: Further Differentiation and Applications (9 lessons)
    - Differentiation Rules
    - Exponential and Logarithmic Functions
    - Trigonometric Functions
    - Applications of Differentiation
    - The Second Derivative and Applications of Differentiation
  - Topic 3.2: Integrals (24 lessons)
    - Anti-Differentiation
    - Definite Integrals
    - Applications of Integration
      - Area Under Curves
      - Numerical Methods
  - Topic 3.3: Discrete Random Variables (2 lessons)
    - General Discrete Random Variables
    - Binomial Distributions
- Unit 4
  - Topic 4.1: The Logarithmic Function (5 lessons)
  - Topic 4.2: Continuous Random variables and the Normal Distribution (6 lessons)
  - Topic 4.3: Interval Estimates for Proportions (7 lessons)

## Specialist Mathematics

- Unit 1
  - Topic 1.3: Geometry (11 lessons)
    - Angle Theorems for Circles

- Chord Properties
- Maths in Context
- Unit 2
  - Topic 2.2: Matrices (15 lessons)
    - Matrix Fundamentals
    - Matrix Products
    - Writing Information as a Matrix
    - Matrix Equations
    - Transition Matrices
  - Topic 2.3: Real and Complex Numbers (6 lessons)
- Unit 3
  - Topic 3.1: Complex Numbers (6 lessons)
  - Topic 3.2: Functions and Sketching Graphs (6 lessons)
- Unit 4
  - Topic 4.1: Integration and Applications of Integration (14 lessons)
    - Integration by Substitution
    - Definite Integration
    - Numerical Methods
  - Topic 4.2: Rates of Change and Differential Equations (12 lessons)