

# Singapore Math Curriculum for Grades 5-10

## Parent Information Guide

### Overview

This guide provides a clear overview of what your child will learn in Singapore mathematics education from grades 5 through 10 (Primary 5 through Secondary 4). Our curriculum aligns with Singapore's Ministry of Education standards and has consistently produced top-performing students in international assessments like TIMSS and PISA.

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### Grade 5 (Primary 5): Mastering Fundamentals

#### Key Topics:

- Whole Numbers: Numbers up to 10 million, approximation and estimation
- Fractions: Operations with unlike fractions, multiplication and division
- Decimals: Multiplication and division by powers of 10 and decimals
- Percentages: Concept, calculations, finding whole given part and percentage
- Ratio: Equivalent ratios, comparing, dividing quantities
- Rate: Unit rates, conversion, problem-solving
- Geometry: Area of triangles, ratio and scale, volume of cubes/cuboids
- Angles: Measuring, drawing, properties
- Statistics: Average (mean), line graphs and interpretation

Why It Matters: Primary 5 develops deep conceptual understanding through Singapore's renowned Concrete-Pictorial-Abstract (CPA) approach, building strong foundations for algebra.

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### Grade 6 (Primary 6): Transition to Secondary Math

#### Key Topics:

- Fractions: Dividing fractions by whole numbers and fractions
- Decimals: Advanced division, conversion between fractions and decimals
- Percentages: Part of whole, increasing/decreasing quantities
- Ratio: Complex ratio problems and applications
- Speed: Average speed, conversion of units, problem-solving
- Algebra: Algebraic expressions in one variable, simple equations
- Geometry: Area of parallelograms and triangles, volume calculations
- Circles: Parts, circumference, and area
- Nets: 3D shape construction
- Statistics: Pie charts and data interpretation
- Probability: Simple probability expressed as fractions

Why It Matters: Primary 6 completes elementary foundations and introduces formal algebra, preparing students for the Primary School Leaving Examination (PSLE) and secondary mathematics.

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### Grade 7 (Secondary 1): Building Algebraic Fluency

#### Key Topics:

- Numbers: Primes, HCF, LCM, integers, rational numbers
- Ratio & Proportion: Map scales, direct and inverse proportion
- Percentages: Increase/decrease, reverse percentages, interest
- Algebraic Expressions: Manipulation, expansion, factorization
- Functions & Graphs: Cartesian coordinates, linear graphs, gradient
- Equations & Inequalities: Linear equations and simple inequalities
- Geometry: Angles in triangles and polygons, congruent triangles
- Mensuration: Area and circumference of circles, volume of prisms/cylinders
- Coordinate Geometry: Distance and midpoint
- Statistics: Data collection, histograms, stem-and-leaf diagrams
- Probability: Experimental and theoretical probability

Why It Matters: Secondary 1 introduces rigorous algebraic thinking and geometric proofs, developing mathematical reasoning essential for O-Level success.

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## Grade 8 (Secondary 2): Advanced Problem-Solving

Key Topics:

- Algebraic Manipulation: Quadratic expressions, algebraic fractions
- Functions & Graphs: Quadratic and exponential functions
- Equations: Quadratic equations, simultaneous linear equations
- Congruence & Similarity: Properties of similar figures, enlargement
- Circle Properties: Angles in circles, arc length, sector area
- Pythagoras' Theorem: Applications in 2D and 3D
- Trigonometry: Sine, cosine, tangent ratios and applications
- Statistics: Cumulative frequency, box-and-whisker plots
- Measures of Dispersion: Range and interquartile range
- Probability: Combined events, mutually exclusive and independent events

Why It Matters: Secondary 2 develops sophisticated problem-solving skills and introduces trigonometry, essential for higher-level mathematics and sciences.

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## Grade 9 (Secondary 3): O-Level Preparation Begins

Key Topics:

- Indices & Surds: Laws of indices, simplifying surds and radicals
- Algebraic Fractions: Advanced manipulation and simplification
- Quadratic Functions: Completing the square, maximum/minimum problems
- Equations & Inequalities: Solving complex equations and inequalities
- Coordinate Geometry: Equation of a line, parallel and perpendicular lines
- Graphs: Sketching and interpreting various function graphs
- Trigonometry: Sine and cosine rules, area of triangles, 3D problems
- Mensuration: Arc length, sector area, volume and surface area
- Vectors: Introduction to vectors in two dimensions
- Statistics: Cumulative frequency curves, standard deviation (introduction)
- Probability: Tree diagrams, conditional probability

Why It Matters: Secondary 3 is crucial for O-Level preparation, solidifying algebraic fluency and advancing geometric and trigonometric skills for university pathways.

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## Grade 10 (Secondary 4): O-Level Mastery

Key Topics:

- Functions: Composite and inverse functions
- Quadratics: Advanced factorization, quadratic formula, applications
- Simultaneous Equations: Linear-quadratic systems
- Algebraic Manipulation: Complex expressions and proofs
- Coordinate Geometry: Coordinate proofs, perpendicular bisectors
- Trigonometry: Trigonometric identities, graphs of sine/cosine/tangent
- Applications: Bearings, 3D trigonometry, real-world problem-solving
- Mensuration: Compound shapes, spheres, cones, pyramids
- Vectors: Operations, magnitude, direction, applications
- Matrices: Introduction to matrices and transformations
- Statistics: Statistical diagrams, measures of central tendency and spread
- Probability: Advanced probability including permutations and combinations

Why It Matters: Secondary 4 completes O-Level preparation, ensuring mastery of all mathematical concepts required for GCE O-Level examinations and A-Level mathematics.

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## How Our Program Supports Your Child

- + Aligned with Singapore MOE Standards - Follows the world-renowned Singapore mathematics curriculum
  - + CPA Approach - Concrete-Pictorial-Abstract method ensures deep understanding
  - + Problem-Solving Focus - Develops critical thinking through challenging word problems
  - + Individualized Learning - Adapts to your child's pace and learning style
  - + PSLE & O-Level Ready - Prepares students for major examinations
  - + Expert Tutors - Experienced educators trained in Singapore math pedagogy
  - + International Recognition - Prepares students for global academic success
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## Progression Path

Primary 5-6 (Grades 5-6): Build strong foundations through the CPA approach and master arithmetic

Secondary 1-2 (Grades 7-8): Develop algebraic fluency and geometric reasoning

Secondary 3-4 (Grades 9-10): Master O-Level mathematics and prepare for A-Level

Junior College (Grades 11-12): Advance to H1/H2/H3 Mathematics and Further Mathematics

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## Questions?

Our curriculum is designed to ensure your child develops:

- Deep conceptual understanding through the CPA approach
- Strong problem-solving and heuristic thinking skills
- Mathematical reasoning and logical thinking
- Confidence in tackling complex, multi-step problems
- Preparation for PSLE and O-Level examinations (top global rankings)
- Readiness for A-Level mathematics and university STEM programs

Contact us to learn more about how we can support your child's mathematical journey using the proven Singapore method!

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\*This curriculum guide is based on Singapore's Ministry of Education Mathematics Syllabus and prepares students for Primary School Leaving Examination (PSLE) and GCE O-Level examinations.\*