



Middle School Mathematics

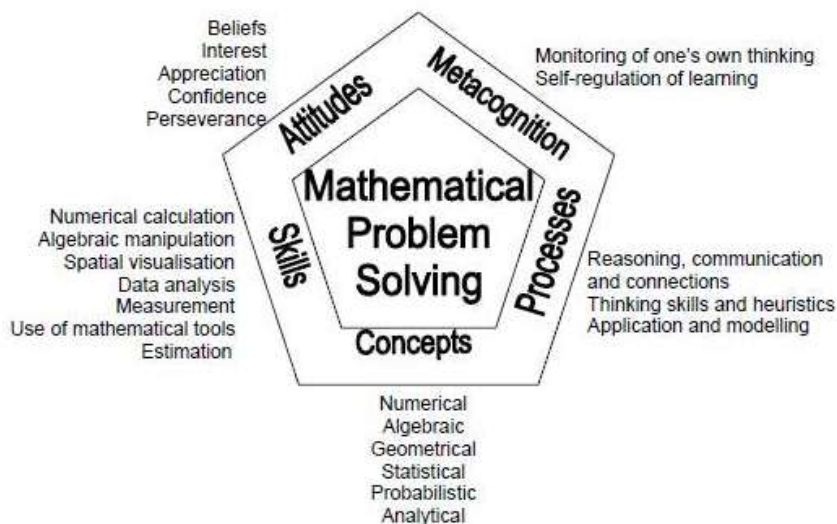
Curriculum Content

St. Mark's believes that Mathematics is an excellent vehicle for the development and improvement of a person's intellectual competence in logical reasoning, spatial visualisation, analysis and abstract thought. Our students develop numeracy, reasoning, thinking skills, and problem solving skills through the learning and application of mathematics. These are valued not only in science and technology, but also in everyday living and in the workplace.

Singapore Mathematics curriculum is well-known for its advancement in content and depth of study in comparison with other curricula. Based on this well-acclaimed curriculum, our program emphasises on the development of solid mathematical skills. Students are taught a variety of skills in problem-solving using different Mathematical heuristics, including the Model Method. An emphasis on providing a strong foundation in mathematics education will ensure that our students have a competitive edge to meet the challenges of IGCSE examination in Year 9 and 10. At the same time students are also given the excitement to learn mathematics through games, which offers students opportunities for creative work and moments of enlightenment and joy.

MATHEMATICS FRAMEWORK

This framework shows the underlying principles of an effective mathematics programme that is applicable to all levels, from the primary to A-levels. It sets the direction for the teaching, learning, and assessment of mathematics.



Mathematical problem solving is central to mathematics learning. It involves the acquisition and application of mathematics concepts and skills in a wide range of situations, including non-routine, open-ended and real-world problems.

The development of mathematical problem solving ability is dependent on five inter-related components, namely, *Concepts, Skills, Processes, Attitudes* and *Metacognition*.

Affiliations





Year 7 Curriculum Content

Topic	Content
Factors And Multiples	<ul style="list-style-type: none"> ▪ Primes, Prime Factorizations and Index Notation. ▪ Highest Common Factors (HCF) ▪ Lowest Common Multiple (LCM) ▪ Square Roots And Cube Roots
Real Numbers	<ul style="list-style-type: none"> • Idea of Negative Numbers And The Number Line. • Addition And Subtraction of Integers. • Multiplication, Division And Combined Operations of Integers • Rational Numbers • Real Numbers And Summary Of the Use Of Calculators
Approximation And Estimation	<ul style="list-style-type: none"> • Rounding Off Numbers to Decimal Places. • Rounding off Numbers to Significant Figures. • Estimation
Introduction to Algebra	<ul style="list-style-type: none"> • The Use of Letters In Algebra. • Evaluation Of Algebraic Expressions And Formulae. • Translation Of Real-world Situations Into Algebraic Expressions.
Algebraic Manipulation	<ul style="list-style-type: none"> • Like Terms And Unlike Terms • Addition And Subtraction Of Linear Expressions • Simplification Of Linear Expression. • Factorizations by Using Common Factors.
Simple Equations In One Variable	<ul style="list-style-type: none"> • Simple Linear Equations in one Variable. • Equations Involving Brackets. • Simple Fractional Equations. • Forming Linear Equations to solve problems.
Angles And Parallel Lines	<ul style="list-style-type: none"> • Points, Lines And Planes • Angles • Parallel Lines And Transversal • Perpendicular Bisectors And Angle Bisectors
Triangles And Polygons	<ul style="list-style-type: none"> • Triangles • Quadrilaterals • Polygons • Construction of Triangles And Quadrilaterals



Topic	Content
Ratio, Rate And Speed	<ul style="list-style-type: none">• Ratio• Rate• Speed
Percentage	<ul style="list-style-type: none">• Simple Percentage Problems• Reverse Percentages• Percentage Increase And Decrease• Discount And GST
Number Patterns	<ul style="list-style-type: none">• Numbers Patterns And Sequences• General Terms Of A Sequence
Coordinates And Linear Functions	<ul style="list-style-type: none">• Cartesian coordinate system.• Idea Of A Function• Linear Functions And Their Graphs• Gradients Of Linear Graphs
Simple Inequalities	<ul style="list-style-type: none">• Solving Simple Inequalities• Applications Of Simple Inequalities
Perimeter And Area Of Plane Figures	<ul style="list-style-type: none">• Area Of Parallelograms• Area Of Trapeziums• Perimeter And Area Of Composite Plane Figures
Volume And Surface Area of Solids.	<ul style="list-style-type: none">• Views And Nets of 3D shapes• Volume and Total Surface Area Of Prisms.• Volume and Total Surface Area Of Cylinders• Volume and Surface Area of Composite Solids.
Data Handling	<ul style="list-style-type: none">• Collection Of Data• Organization Of Data• Pictograms And Bar Graphs• Line Graphs And Pie Charts

Affiliations





Year 8 Curriculum Content

Topic	Content
Proportion	<ul style="list-style-type: none"> • Map Scale • Direct and Inverse Proportion
Expansion and Factorizations of Algebraic Expression	<ul style="list-style-type: none"> • Quadratic Expressions • Expansion of the Product of Algebraic Expressions • Factorisations of $ax^2 + bx + c$ • Special Products of Algebraic Expressions • Factorisation Using Algebraic Expression Products • Factorisation by Grouping Terms
Simple Algebraic Fractions	<ul style="list-style-type: none"> • Simplifying Simple Algebraic Fractions • Multiplication and Division of Algebraic Fractions • Addition and Subtraction of Algebraic Fractions • Evaluation of an Unknown Quantity in a Formula • Changing the Subject of a Formula
Quadratic Functions in Two Variables	<ul style="list-style-type: none"> • Graphs of Quadratic Functions • Solving Quadratic Equations by Factorization • Applications of Quadratic Equations
Linear Equations in Two Variables	<ul style="list-style-type: none"> • Linear Equations in Two Variables • Solving Simultaneous Linear Equations in Two Variables by Graphical Method • Solving Simultaneous Linear Equations in Two Variables by Substitution Method • Solving Simultaneous Linear Equations in Two Variables by Elimination Method • Solving Problems Using Simultaneous Equations
Congruence Similarity	<ul style="list-style-type: none"> • Congruence and Similarity • Scale Factor • Scale Drawing
Pythagoras Theorem	<ul style="list-style-type: none"> • Pythagoras Theorem • Application of Pythagoras Theorem • Converse of Pythagoras Theorem
Trigonometric Ratios of Acute Angles	<ul style="list-style-type: none"> • Trigonometric Ratios of Acute Angles • Finding Unknown Angles in a Right-angled Triangle
Measuring of Pyramids, Cones and Spheres	<ul style="list-style-type: none"> • Pyramids, Cones, Spheres
Data Analysis	<ul style="list-style-type: none"> • Dot Diagrams and Histograms • Stem-and-leaf Diagrams • Concept of Mean, Median and Mode

Affiliations





Affiliations

