

# Thailand International Mathematical Olympiad Syllabus

## Primary Group

Topics	Primary 1	Primary 2	Primary 3
Logical Thinking	<ul style="list-style-type: none"> <li>➤ Balance Problem</li> <li>➤ Basic Number Pattern &amp; Sequence</li> <li>➤ Basic Figure Pattern</li> <li>➤ IQ Age Problem &amp; Date Problem</li> <li>➤ Guess on 2-digit numbers</li> </ul>	<ul style="list-style-type: none"> <li>➤ Balance Problem</li> <li>➤ Basic Number Pattern &amp; Sequence</li> <li>➤ Basic Figure Pattern</li> <li>➤ IQ Age Problem &amp; Date Problem</li> <li>➤ Guess on 2-digit numbers</li> </ul>	<ul style="list-style-type: none"> <li>➤ Periodic Problem</li> <li>➤ Advanced Figure Pattern</li> <li>➤ IQ Age Problem &amp; Date Problem</li> <li>➤ Guess on 3-digit numbers</li> <li>➤ Basic Pigeonhole Principle</li> </ul>
Arithmetic	<ul style="list-style-type: none"> <li>➤ Smart Addition on 1-digit numbers with carrying</li> <li>➤ Smart Subtraction on 1 to 2-digit numbers with carrying</li> <li>➤ Multiplication on 1 to 2-digit numbers without carrying</li> <li>➤ Balance on an equation</li> </ul>	<ul style="list-style-type: none"> <li>➤ Smart Addition on 2-digit numbers with carrying</li> <li>➤ Smart Subtraction on 1 to 2-digit numbers with carrying</li> <li>➤ Multiplication on 2-digit numbers with carrying</li> <li>➤ Balance on an equation</li> </ul>	<ul style="list-style-type: none"> <li>➤ Gaussian Addition</li> <li>➤ Smart Addition on 3-digit numbers with carrying</li> <li>➤ Smart Subtraction on 3-digit numbers with carrying</li> <li>➤ Multiplication on 3-digit numbers</li> </ul>
Number Theory	<ul style="list-style-type: none"> <li>➤ Introduction on Odd &amp; Even</li> <li>➤ Mathematical Leveling</li> <li>➤ Advanced Fibonacci Series</li> <li>➤ Match Equation</li> <li>➤ Basic Arithmetic Pattern</li> </ul>	<ul style="list-style-type: none"> <li>➤ Introduction on Odd &amp; Even</li> <li>➤ Mathematical Leveling</li> <li>➤ Advanced Fibonacci Series</li> <li>➤ Match Equation</li> <li>➤ Basic Arithmetic Pattern</li> </ul>	<ul style="list-style-type: none"> <li>➤ Introduction on prime numbers</li> <li>➤ Sum, Difference &amp; Multiples</li> <li>➤ Arithmetic Operation</li> <li>➤ Basic Arithmetic Pattern</li> <li>➤ Simple Divisibility</li> </ul>
Geometry	<ul style="list-style-type: none"> <li>➤ Counting on number of 2-D &amp; 3-D Figures</li> <li>➤ Counting on number of sides &amp; interior angles</li> <li>➤ Distinction on 2-D Figures</li> <li>➤ Basic Figure Pattern</li> </ul>	<ul style="list-style-type: none"> <li>➤ Counting on number of 2-D &amp; 3-D Figures</li> <li>➤ Counting on number of sides &amp; interior angles</li> <li>➤ Distinction on 2-D Figures</li> <li>➤ Basic Figure Pattern</li> </ul>	<ul style="list-style-type: none"> <li>➤ Counting on number of 2-D Figures</li> <li>➤ Counting on Vertices, Faces &amp; Edges of 3-D Figures</li> <li>➤ Observations about 3-D Figures</li> <li>➤ Basic Concept about Area &amp; Perimeter</li> <li>➤ Relationship between Line Segments, Angles &amp; Figures</li> </ul>
Combinatorics	<ul style="list-style-type: none"> <li>➤ Seven Bridges of Königsberg</li> <li>➤ Arranging numbers in orders</li> <li>➤ Simple Distribution</li> <li>➤ Counting on specific numbers</li> <li>➤ Formation of a 3-digit number</li> </ul>	<ul style="list-style-type: none"> <li>➤ Arranging numbers in orders</li> <li>➤ Simple Distribution</li> <li>➤ Counting on specific numbers</li> <li>➤ Formation of a 3-digit number</li> <li>➤ Simple Combination</li> </ul>	<ul style="list-style-type: none"> <li>➤ Basic Routing Problem</li> <li>➤ Advanced Distribution</li> <li>➤ Counting on specific numbers</li> <li>➤ Formation of a 3-digit number</li> <li>➤ Excess and Deficiency</li> </ul>

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Topics	Primary 4	Primary 5	Primary 6
Logical Thinking	<ul style="list-style-type: none"> <li>➤ Periodic Problem</li> <li>➤ Advanced Figure Pattern</li> <li>➤ Chicken Rabbit Theorem</li> <li>➤ Guess on 3-digit numbers</li> <li>➤ Basic Pigeonhole Principle</li> </ul>	<ul style="list-style-type: none"> <li>➤ Chicken Rabbit Theorem</li> <li>➤ Speed, Distance &amp; Time Problem</li> <li>➤ Guess on 4-digit numbers by given number properties</li> <li>➤ Advanced Pigeonhole Principle</li> </ul>	<ul style="list-style-type: none"> <li>➤ Construction Problem</li> <li>➤ Speed, Distance &amp; Time Problem</li> <li>➤ Guess on 4-digit numbers by given number properties</li> <li>➤ Advanced Pigeonhole Principle</li> </ul>
Arithmetic	<ul style="list-style-type: none"> <li>➤ Gaussian Addition</li> <li>➤ Smart Addition on 4-digit numbers with carrying</li> <li>➤ Smart Subtraction on 4-digit numbers with carrying</li> <li>➤ Multiplication on 3-digit numbers</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Gaussian Addition</li> <li>➤ Smart Calculation on Decimals &amp; Fractions</li> <li>➤ Sum of a series of square numbers</li> <li>➤ Method of Difference equations</li> <li>➤ Smart Addition on 5-digit numbers with carrying</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Gaussian Addition</li> <li>➤ Smart Calculation on Fractions</li> <li>➤ Sum of a series of square numbers</li> <li>➤ Sum of a series of cubic numbers</li> <li>➤ Method of Difference equations</li> <li>➤ Sum of Geometric Sequence</li> </ul>
Number Theory	<ul style="list-style-type: none"> <li>➤ Introduction on prime numbers</li> <li>➤ Sum, Difference &amp; Multiples</li> <li>➤ Arithmetic Operation</li> <li>➤ Relationship between L.C.M &amp; H.C.F</li> <li>➤ Simple Divisibility</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Divisibility</li> <li>➤ Number of positive factors</li> <li>➤ Sum of all positive factors</li> <li>➤ Unit digit of a series of <math>n</math>-digit numbers</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Divisibility</li> <li>➤ Number of positive factors</li> <li>➤ Sum of all positive factors</li> <li>➤ Unit digit of a series of <math>n</math>-digit numbers</li> </ul>
Geometry	<ul style="list-style-type: none"> <li>➤ Counting on number of 2-D Figures</li> <li>➤ Counting on Vertices, Faces &amp; Edges of 3-D Figures</li> <li>➤ Observations about 3-D Figures</li> <li>➤ Basic Concept about Area &amp; Perimeter</li> <li>➤ Relationship between Line Segments, Angles &amp; Figures</li> </ul>	<ul style="list-style-type: none"> <li>➤ Area &amp; Perimeter of 2-D Figures</li> <li>➤ Ratio of Area of 2-D Figures</li> <li>➤ Volume &amp; Surface Area of 3-D Figures</li> <li>➤ Counting on number of 2-D Figures</li> <li>➤ Relationship between Line Segments, Angles &amp; Figures</li> </ul>	<ul style="list-style-type: none"> <li>➤ Area &amp; Perimeter of 2-D Figures</li> <li>➤ Ratio of Area of 2-D Figures</li> <li>➤ Volume &amp; Surface Area of 3-D Figures</li> <li>➤ Area of circle &amp; Circumstance</li> <li>➤ Relationship between Line Segments, Angles &amp; Figures</li> </ul>
Combinatorics	<ul style="list-style-type: none"> <li>➤ Basic Routing Problem</li> <li>➤ Advanced Distribution</li> <li>➤ Counting on specific numbers</li> <li>➤ Formation of a 3-digit number</li> <li>➤ Excess and Deficiency</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Advanced Routing Problem</li> <li>➤ Combinations &amp; Permutations</li> <li>➤ Principle of Inclusion and Exclusion</li> <li>➤ Excess and Deficiency</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Advanced Routing Problem</li> <li>➤ Combinations &amp; Permutations</li> <li>➤ Principle of Inclusion and Exclusion</li> <li>➤ Simple Probability</li> </ul>

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## Secondary Group

Topics	Secondary 1	Secondary 2
Logical Thinking	<ul style="list-style-type: none"> <li>➤ Advanced Periodic Problems</li> <li>➤ Speed, Distance &amp; Time Problem</li> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Guess on 4-digit numbers</li> <li>➤ Relationship between mean, median &amp; sum</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Guess on 4-digit numbers</li> <li>➤ Relationship between mean, median &amp; sum</li> <li>➤ Advanced Distributions</li> <li>➤ Advanced Periodic Problems</li> </ul>
Algebra	<ul style="list-style-type: none"> <li>➤ Operation on directed numbers</li> <li>➤ Algebraic expression</li> <li>➤ Linear Equations</li> <li>➤ Introduction on Absolute Value</li> <li>➤ Simplification on surd form</li> <li>➤ Euclidean Algorithm</li> </ul>	<ul style="list-style-type: none"> <li>➤ Algebraic expression</li> <li>➤ Factorization</li> <li>➤ Introduction on Absolute Value</li> <li>➤ Simplification on surd form</li> <li>➤ Euclidean Algorithm</li> <li>➤ Introduction on Inequalities</li> </ul>
Number Theory	<ul style="list-style-type: none"> <li>➤ Advanced problems on Prime Numbers</li> <li>➤ Counting on possible solution(s) on Indefinite equations</li> <li>➤ Introduction on repeating surd forms</li> <li>➤ Sum of all Digits</li> <li>➤ Relationship between L.C.M &amp; H.C.F</li> </ul>	<ul style="list-style-type: none"> <li>➤ Periodic remainder problems</li> <li>➤ Counting on possible solution(s) on Indefinite equations</li> <li>➤ Introduction on repeating surd forms</li> <li>➤ Extreme values of a polynomial</li> <li>➤ Factor Theorem</li> </ul>
Geometry	<ul style="list-style-type: none"> <li>➤ Usage of Pythagorean theorem</li> <li>➤ Characteristics of Congruent Triangles &amp; Similar Triangles</li> <li>➤ Area of circle &amp; Circumstance</li> <li>➤ Relationship between Line Segments, Angles &amp; Figures</li> <li>➤ Knowledge on Rectangular Coordinate System</li> <li>➤ Volume &amp; Surface Area of 3-D Figures</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced usage of Pythagorean theorem</li> <li>➤ Characteristics of Congruent Triangles &amp; Similar Triangles</li> <li>➤ Triangle Inequality</li> <li>➤ Relationship between Line Segments, Angles &amp; Figures</li> <li>➤ Knowledge on Rectangular Coordinate System</li> <li>➤ Concepts about angle bisectors</li> </ul>
Combinatorics	<ul style="list-style-type: none"> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Advanced Routing Problem</li> <li>➤ Combinations &amp; Permutations</li> <li>➤ Principle of Inclusion and Exclusion</li> <li>➤ Simple Probability</li> <li>➤ Triangle Inequality</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Advanced Routing Problem</li> <li>➤ Combinations &amp; Permutations</li> <li>➤ Principle of Inclusion and Exclusion</li> <li>➤ Simple Probability</li> <li>➤ Counting on Like &amp; Unlike Terms of a polynomial</li> </ul>

# Thailand International Mathematical Olympiad Syllabus

## Secondary Group

Topics	Secondary 3	Senior Secondary Group (S4 – S6 in ONE group)
Logical Thinking	<ul style="list-style-type: none"> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Guess on 4-digit numbers</li> <li>➤ Relationship between mean, median &amp; sum</li> <li>➤ Advanced Distributions</li> <li>➤ Advanced Periodic Problems</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Guess on 5-digit numbers</li> <li>➤ Relationship between mean, median &amp; sum</li> <li>➤ Advanced Distributions</li> <li>➤ Advanced Periodic Problems</li> </ul>
Algebra	<ul style="list-style-type: none"> <li>➤ Sum &amp; Product of roots of a quadratic equation</li> <li>➤ Algebraic expression</li> <li>➤ Introduction on Absolute Value</li> <li>➤ Simplification on surd form</li> <li>➤ Euclidean Algorithm</li> <li>➤ Introduction on Inequalities</li> </ul>	<ul style="list-style-type: none"> <li>➤ Sum &amp; Product of roots of a quadratic equation</li> <li>➤ Algebraic expression</li> <li>➤ Introduction on Absolute Value</li> <li>➤ Simplification on surd form</li> <li>➤ Euclidean Algorithm</li> <li>➤ Introduction on Inequalities</li> </ul>
Number Theory	<ul style="list-style-type: none"> <li>➤ Periodic remainder problems</li> <li>➤ Counting on possible solution(s) on Indefinite equations</li> <li>➤ Introduction on repeating surd forms</li> <li>➤ Extreme values of a polynomial</li> <li>➤ Modular Arithmetic</li> </ul>	<ul style="list-style-type: none"> <li>➤ Periodic remainder problems</li> <li>➤ Counting on possible solution(s) on Indefinite equations</li> <li>➤ Introduction on repeating surd forms</li> <li>➤ Extreme values of a polynomial</li> <li>➤ Modular Arithmetic</li> <li>➤ Introduction on complex numbers</li> </ul>
Geometry	<ul style="list-style-type: none"> <li>➤ Advanced usage of Pythagorean theorem</li> <li>➤ Menelaus' Theorem</li> <li>➤ Relationship between Line Segments, Angles &amp; Figures</li> <li>➤ Advanced knowledge on Rectangular Coordinate System</li> <li>➤ Trigonometry</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced knowledge on Rectangular Coordinate System</li> <li>➤ Menelaus' Theorem</li> <li>➤ Relationship between Line Segments, Angles &amp; Figures</li> <li>➤ Circumcentre, Incentre, Centroid &amp; Orthocentre</li> <li>➤ Trigonometry</li> </ul>
Combinatorics	<ul style="list-style-type: none"> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Combinations &amp; Permutations</li> <li>➤ Principle of Inclusion and Exclusion</li> <li>➤ Advanced Probability</li> <li>➤ Counting on Like &amp; Unlike Terms of a polynomial</li> </ul>	<ul style="list-style-type: none"> <li>➤ Advanced Pigeonhole Principle</li> <li>➤ Combinations &amp; Permutations</li> <li>➤ Principle of Inclusion and Exclusion</li> <li>➤ Advanced Probability</li> <li>➤ Counting on Like &amp; Unlike Terms of a polynomial</li> </ul>