

# Mathematics Domain Learning Path (Non-IMO Training)

	Numbers and Arithmetic	Algebra
Level 5	<p><u>Number Theory III*</u></p>	<p><u>Linear Algebra I #</u></p> <p><u>Introduction to Abstract Groups*</u></p>
Level 4	<p><u>Coding and Cryptography*</u> <small>E</small></p> <p><u>Number Theory II #</u> <small>E</small></p>	<p><u>Matrices and Determinant*</u></p> <p><u>Polynomials</u></p> <p><u>Infinite Series*</u> <small>E</small></p> <p><u>Matrices and Equations #</u></p> <p><u>Complex Number and Geometry II</u></p>
Level 3	<p><u>Number Theory I</u> <small>E</small></p>	<p><u>Inequalities</u></p> <p><u>Complex Number and Geometry I</u></p>
Level 2	<p><u>Handling Sequences and Series</u></p> <p><u>Number Systems and Numeral Systems*</u> <small>E</small></p>	<p><u>Equations and Identities</u></p> <p><u>Induction and Identities #</u></p>
Level 1	<p><u>Numbers Around Our Life</u> <small>E</small></p> <p><u>Sequences and Patterns</u></p> <p><u>Enrichment Programmes*</u> <small>E</small></p>	<p><u>Basic Algebra</u></p> <p><u>Enrichment Programmes*</u> <small>E</small></p> <p><u>Algebra I</u></p> <p><u>Algebra II</u></p>

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	Analytical Study	Geometry and Topology
Level 5	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Mathematical Analysis – An Overture, First Movement</u> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Mathematical Analysis – An Overture, Second Movement</u> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Differential Equations*</u> </div> </div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Towards Differential Geometry #</u> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Advanced Geometry*</u> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Surfaces &amp; knots*</u> </div> </div>
Level 4	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Graphing with Calculus*</u> <small>E</small> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Harder Calculus*</u> <small>E</small> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Elementary Functions*</u> <small>E</small> </div> </div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Vectors*</u> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center;"> <u>Geometric Perspective of Complex Numbers #</u> </div> </div>
Level 3	<div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 80%; margin: auto;"> <u>Graphing without Calculus</u> </div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 40%;"> <u>Trigonometry</u> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 40%;"> <u>3D Solids*</u> </div> </div>
Level 2	<div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 80%; margin: auto;"> <u>Quadratic Functions and Standard Conics</u> </div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Conics*</u> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Geometric Constructions I*</u> <small>E</small> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Plane Geometry</u> </div> <div style="border: 1px solid red; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Coordinate Geometry II</u> </div> <div style="border: 1px solid red; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Geometry II</u> </div> </div>
Level 1	<div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 80%; margin: auto;"> <u>Enrichment Programmes*</u> <small>E</small> </div>	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Introduction to Geometry</u> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Mensuration</u> </div> <div style="border: 1px solid blue; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Enrichment Programmes*</u> <small>E</small> </div> <div style="border: 1px solid red; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Coordinate Geometry I</u> </div> <div style="border: 1px solid red; border-radius: 15px; padding: 5px; text-align: center; width: 15%;"> <u>Geometry I</u> </div> </div>

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	Discrete Math, Probability, Statistics	Across Domains and Interdisciplinary
<b>Level 5</b>	<p><u>Probability in Action – Part II</u></p> <p><u>Numerical Methods and Modelling II*</u></p> <p><u>Applied Regression Analysis*</u></p>	<p><u>Biomedical Statistics*</u></p> <p><u>Mathematics and Computers III*</u></p> <p><u>Mathematics and Physics*</u></p>
<b>Level 4</b>	<p><u>Survey Sampling and Data Analysis</u> <small>E</small></p> <p><u>Numerical Methods and Modelling I*</u> <small>E</small></p> <p><u>Advanced Counting Techniques</u> <small>E</small></p>	<p><u>Games and Mathematics – Introduction to Game Theory #</u> <small>E</small></p> <p><u>Geometric Constructions II*</u> <small>E</small></p> <p><u>Introduction to Advanced Mathematics – Algebra, Geometry and Calculus #</u></p>
<b>Level 3</b>	<p><u>Back-of-envelope Calculation and Probability Modeling #</u> <small>E</small></p> <p><u>Graph Theory*</u> <small>E</small></p>	<p><u>Mathematics and Computers II</u> <small>E</small></p> <p><u>Mathematics and Economics*</u> <small>E</small></p>
<b>Level 2</b>	<p><u>Probability in Action – Part I</u></p> <p><u>Speaking of Statistics</u></p>	<p><u>Introduction to Contract Bridge #</u> <small>E</small></p> <p><u>Geometry and Algebra</u> <small>E</small></p> <p><u>Rethinking School Mathematics: What the Textbooks Don't Tell Us #</u> <small>E</small></p> <p><u>Mathematics Enrichment Course #</u> <small>E</small></p>
<b>Level 1</b>	<p><u>Simple Probabilities</u></p> <p><u>Enrichment Programmes*</u> <small>E</small></p>	<p><u>Enrichment Programmes*</u> <small>E</small></p> <p><u>Mathematics and Computers I</u> <small>E</small></p> <p><u>Mathematical World Beyond imagination #</u> <small>E</small></p>