MIND CARVER

Global Math Olympiad 3.0 — Syllabus

Discovering Mathematics: A Journey of Curiosity and Creativity

Overview

GMO 3.0 syllabus spans six levels from Grade 1 to Grade 12, each themed to keep the subject engaging while building progressively deeper mathematical thinking — from playful number stories at the Seed level to calculus and vector algebra at the Scholar level.

Every level is built from exactly 5 topic areas, and every level's paper follows the same exam pattern: 40 questions in 60 minutes, 2.5 marks per question (100 marks total), with an equal 8-question / 20-mark share for each of the 5 topics. This keeps the paper balanced across topics at every level, regardless of grade.

Level	Grades	Focus Areas
Seed Level	1 – 2	Numbers & counting, shapes, patterns, simple logic
Explorer Level	3 – 4	Four operations, fractions basics, geometry, time & money
Voyager Level	5 – 6	BODMAS, fractions/decimals, geometry, data handling
Pioneer Level	7 – 8	Rational numbers, percentages, algebra, probability, geometry
Achiever Level	9 – 10	Real numbers, quadratics, trigonometry, coordinate geometry, statistics
Scholar Level	11 – 12	Functions, calculus foundations, vectors, advanced trigonometry, probability

Seed Level (Grades 1–2)

Magical World of Numbers

Playful Arithmetic

- Addition and subtraction with number stories
- Comparing and ordering numbers
- Number families and number bonds
- Skip counting by 2s, 5s, and 10s

Shape Detectives

- Recognizing shapes around us
- Counting sides and corners
- Simple shape patterns
- Exploring symmetry in everyday objects

Time & Calendar Explorers

- Reading clocks (o'clock, half past)
- Days of the week and months
- Simple time journals
- Understanding yesterday, today, and tomorrow

Pattern Pioneers

- Number sequences
- Completing simple patterns
- Spotting patterns in everyday life
- A Creating repeating patterns using colours and shapes

Thinking Adventurers

- Odd-one-out puzzles
- Matching and logical thinking games
- Simple story-based reasoning
- Estimating and checking simple answers

Marks & Question Distribution — Seed Level

40 questions · 60 minutes · 2.5 marks per question (100 marks total) · equal 8-question / 20-mark share per topic

Topic	Questions	Marks
Playful Arithmetic	8	20
Shape Detectives	8	20
Time & Calendar Explorers	8	20
Pattern Pioneers	8	20
Thinking Adventurers	8	20
Total	**40**	**100**

Explorer Level (Grades 3–4)

Mathematical Superheroes in Training

Number Wizardry

- Addition, subtraction, multiplication, division
- Real-life word problems
- Story-based math challenges
- Multiples and factors

Geometry Explorers

- Drawing and understanding shapes
- Measuring length, area, and perimeter
- Shape transformations: flip, slide, rotate
- Identifying and drawing lines of symmetry

Fraction Fantastic

- Introducing fractions through everyday examples
- Comparing and adding simple fractions
- Real-world fraction problems
- Equivalent fractions

Time & Money Masters

- Precise time-telling
- Simple budgeting exercises
- Practical money word problems
- Reading calendars and calculating elapsed time

Logic & Reasoning Quest

- Detective-style number puzzles
- Simple codes and patterns
- Cross-topic problem solving
- Data handling using simple pictographs and bar graphs

Marks & Question Distribution — Explorer Level

40 questions · 60 minutes · 2.5 marks per question (100 marks total) · equal 8-question / 20-mark share per topic

Topic	Questions	Marks
Number Wizardry	8	20
Geometry Explorers	8	20
Fraction Fantastic	8	20
Time & Money Masters	8	20
Logic & Reasoning Quest	8	20
Total	**40**	**100**

Voyager Level (Grades 5–6)

Mathematical Investigators

Arithmetic Expedition

- Multi-digit operations
- BODMAS / order of operations
- Real-world mathematical modeling
- Factors, multiples, prime and composite numbers

Fraction & Decimal Explorers

- Converting fractions to decimals
- Operations with fractions and decimals
- Measurement-based problems
- Introduction to percentages and their everyday applications

Geometry Detectives

- Properties of shapes
- Area of composite shapes
- Angle classification
- Circles: radius, diameter, circumference, and simple applications

Reasoning & Logic Lab

- Puzzle solving
- Magic squares
- Cross-disciplinary logic challenges
- Algebraic patterns and simple equations

Data Visualization Pioneers

- Interpreting bar/pie graphs
- Storytelling through data
- Simple data analysis
- Collecting, organizing, and interpreting data using tables and line graphs

Marks & Question Distribution — Voyager Level

40 questions · 60 minutes · 2.5 marks per question (100 marks total) · equal 8-question / 20-mark share per topic

Topic	Questions	Marks
Arithmetic Expedition	8	20
Fraction & Decimal Explorers	8	20
Geometry Detectives	8	20
Reasoning & Logic Lab	8	20
Data Visualization Pioneers	8	20
Total	**40**	**100**

Pioneer Level (Grades 7–8)

Mathematical Innovation Hub

Number System Architects

- Rational numbers in depth
- Percentages and their applications
- Ratio and proportion
- Exponents and powers (laws of indices)

Geometric Innovators

- Properties of triangles and quadrilaterals
- Volume of 3D shapes
- Real-world geometric applications
- Pythagoras' Theorem and its applications

Algebraic Thinkers

- Simplifying expressions
- Solving linear equations
- Building simple mathematical models
- Graphs of linear equations on the Cartesian plane

Probability & Logic Explorers

- Logic puzzles
- Basic probability
- Reasoning through decisions
- Set theory and Venn diagrams for problem solving

Data Science Beginners

- Mean, median, mode
- Reading and interpreting data
- Simple statistical thinking
- Creating and interpreting line graphs and scatter plots

Marks & Question Distribution — Pioneer Level

40 questions · 60 minutes · 2.5 marks per question (100 marks total) · equal 8-question / 20-mark share per topic

Topic	Questions	Marks
Number System Architects	8	20
Geometric Innovators	8	20
Algebraic Thinkers	8	20
Probability & Logic Explorers	8	20
Data Science Beginners	8	20
Total	**40**	**100**

Achiever Level (Grades 9–10)

Mathematical Visionaries

Advanced Number Theory

- The real number system
- Financial mathematics
- Compound interest applications
- Surds and logarithms

Algebraic Problem Solvers

- Quadratic equations
- Polynomials and factorization
- Advanced algebraic techniques
- Sequences and series (arithmetic and geometric progressions)

Geometric Innovators

- Circle properties
- Triangle theorems
- Coordinate geometry
- Transformations and geometric constructions

Trigonometry Explorers

- Trigonometric ratios
- Height and distance problems
- Real-world trigonometry
- Graphs and identities of trigonometric functions

Probability & Statistics Lab

- Single-event probability
- Graphical data representation
- Introduction to predictive modeling
- Measures of dispersion (range and standard deviation) and data interpretation

Marks & Question Distribution — Achiever Level

40 questions · 60 minutes · 2.5 marks per question (100 marks total) · equal 8-question / 20-mark share per topic

Topic	Questions	Marks
Advanced Number Theory	8	20
Algebraic Problem Solvers	8	20
Geometric Innovators	8	20
Trigonometry Explorers	8	20
Probability & Statistics Lab	8	20
Total	**40**	**100**

Scholar Level (Grades 11–12)

Mathematical Frontier Researchers

Advanced Algebraic Thinking

- Function transformations
- Logarithmic and exponential equations
- Mathematical modeling
- Matrices and determinants with real-life applications

Calculus Pioneers

- Differentiation and integration foundations
- Applications of derivatives
- Optimization problems
- Differential equations and their applications

Geometric Innovators

- Conic sections
- Vector algebra
- Advanced geometric problem solving
- Three-dimensional (3D) geometry and analytic geometry

Trigonometric Masters

- Complex trigonometric identities
- Advanced equation solving
- Interdisciplinary applications
- Inverse trigonometric functions and their applications

Probability & Statistical Analysis

- Binomial and normal distributions
- Advanced data analysis
- Predictive modeling and inference
- Correlation and regression analysis

Marks & Question Distribution — Scholar Level

40 questions · 60 minutes · 2.5 marks per question (100 marks total) · equal 8-question / 20-mark share per topic

Topic	Questions	Marks
Advanced Algebraic Thinking	8	20
Calculus Pioneers	8	20
Geometric Innovators	8	20
Trigonometric Masters	8	20
Probability & Statistical Analysis	8	20
Total	**40**	**100**