

# SCO INTERNATIONAL OLYMPIAD

## CLASS 8 MATHS OLYMPIAD SYLLABUS

A comprehensive syllabus guide for schools, teachers, parents, and students

**Designed from Class 8 Maths syllabus pathways and aligned with SCO's preparation flow for guided learning, practice, reporting, and future-ready academic growth.**

- age-fit learning outcomes for Grade 8 / middle-school learners globally
- chapter-wise roadmap across number theory, algebra, geometry, data, and graphs
- teacher, school, and parent guidance for structured Olympiad preparation

Maths	English	Science	Mental Ability	Finance Knowledge
AI	Entrepreneurship	GK	Coding	Life Skills

## SCO International Maths Olympiad - Class 8 Syllabus

Official syllabus guide for students, teachers, schools, and parents

### Syllabus Overview

The SCO International Maths Olympiad Class 8 syllabus develops middle-school mathematical reasoning through number sense, algebra, geometry, data interpretation, mensuration, proportional reasoning, and graph literacy. It is designed to support classroom learning, Olympiad readiness, and independent problem-solving confidence.

### Chapter-wise Learning Pathway

Chapter	Core Focus	Student Learning Outcome	Teacher / School Use
1. Rational Numbers	Develop operations, properties, and comparison of rational numbers in familiar and abstract situations.	Apply closure, commutativity where valid, representation, simplification, and reasoning with fractions and decimals.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
2. Linear Equation in One Variable	Build confidence in translating everyday situations into one-variable equations.	Solve equations with variables on one or both sides and verify answers in context.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
3. Understanding Quadrilaterals	Understand polygons, angle sum, parallelogram properties, and special quadrilaterals.	Identify properties of rectangles, squares, rhombi, trapezia, and parallelograms and use them in proofs.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
4. Practical Geometry	Construct quadrilaterals from given measurements with accuracy and reasoning.	Use ruler, compass, and angle information to make valid constructions and justify uniqueness.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
5. Data Handling	Read, organize, and interpret data using tables, graphs, averages, and probability ideas.	Compute mean, median, mode, range, and simple probabilities from real-world data.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
6. Squares and Square Roots	Recognize perfect squares, square roots, estimation, and numerical patterns.	Use factorization, repeated subtraction, and approximation to evaluate square roots.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
7. Cube and Cube Roots	Understand cubes, cube roots, and applications in measurement and volume problems.	Use prime factorization and pattern recognition to find cube roots.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
8. Comparing Quantities	Apply percentages, ratios, discounts, tax, profit-loss, simple and compound interest.	Compare quantities in financial and real-life contexts using correct percentage reasoning.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
9. Algebraic Expression and Identities	Simplify, multiply, and use identities to solve algebraic problems efficiently.	Apply identities such as $(a+b)^2$ , $(a-b)^2$ , and difference of squares.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
10. Visualising Solid Shapes	Interpret 3D objects, nets, views, and Euler's relation.	Connect faces, vertices, edges, and nets to physical solids and diagrams.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.

11. Mensuration	Solve perimeter, area, surface area, and volume problems involving 2D and 3D shapes.	Apply formulas to rectangles, circles, trapezia, cubes, cylinders, cones, and compound figures.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
12. Exponents and Powers	Use laws of exponents and standard form to represent large and small numbers.	Simplify expressions with integral powers and compare numbers in exponential notation.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
13. Direct and Inverse Proportions	Model relationships where quantities increase or decrease together in predictable ratios.	Identify direct/inverse proportion and solve rate, work, speed, and resource problems.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
14. Factorisation	Break algebraic expressions into factors using common factors, regrouping, and identities.	Factorise expressions and use factors for simplification and equation solving.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
15. Introduction of Graphs	Read and plot points, line graphs, and simple coordinate-plane relationships.	Interpret trends, coordinates, and linear patterns from graphs.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.
16. Playing with Numbers	Explore divisibility, number patterns, digit puzzles, and logical number reasoning.	Use place-value, divisibility tests, and algebraic representation of numbers.	Use examples, visual models, short practice tasks, and application-based discussion before moving to Olympiad-style questions.

## Skills Developed Through the Course

- Numerical fluency with rational numbers, powers, squares, cubes, and percentage reasoning.
- Algebraic thinking through expressions, identities, factorisation, and one-variable equations.
- Spatial and geometric reasoning through quadrilaterals, practical geometry, solid shapes, and mensuration.
- Data interpretation using averages, graphs, probability, and real-life decision problems.
- Olympiad readiness through multi-step reasoning, elimination of distractors, and clear explanation writing.

## Assessment Blueprint

Section	Focus	Question Type	Suggested Weight
General Mathematics	Core chapter concepts and direct applications	MCQ / short numerical reasoning	60-70%
Reason and Assertion	Conceptual truth-testing and explanation	Assertion-reason MCQ	10-15%
Case/Applied Problems	Real-life mathematical modeling	Scenario-based MCQ	10-15%
Achievers Section	Higher-order thinking and multi-step reasoning	Challenging MCQ	10-15%

## Preparation Roadmap

**Stage 1: Concept Build:** Revise formulas, properties, and definitions chapter-wise with examples.

**Stage 2: Skill Practice:** Solve mixed exercises from algebra, geometry, mensuration, and data handling.

**Stage 3: Olympiad Application:** Attempt timed MCQs, reason/assertion questions, and multi-step word problems.

**Stage 4: Review and Reporting:** Analyze errors, revisit weak chapters, and track score, speed, and accuracy.

## Glossary of Key Terms

Term	Meaning
Rational Number	A number expressible as $p/q$ where $q$ is not zero.
Linear Equation	An equation in which the highest power of the variable is one.
Quadrilateral	A polygon with four sides.
Mensuration	The branch of mathematics dealing with measurement of area, perimeter, surface area, and volume.
Probability	A measure of how likely an event is to occur.
Graph	A visual representation of numerical or coordinate data.