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SCO INTERNATIONAL MATHS OLYMPIAD

CLASS 12 SYLLABUS

Official syllabus pathway for SCO International Maths Olympiad

SCO International Olympiad practice, assessment, reporting, and future-ready academic growth.

- relations, functions, algebra, calculus, vectors, 3D geometry, linear programming, and probability
- conceptual problem-solving with real-world modelling, proof logic, and multi-step calculations
- PDF-ready academic layout with compact question labels and explanations for transparent learning

Relations & Functions	Algebra	Calculus	Vectors & 3D	Probability
Matrices	Determinants	Integration	Differential Equations	Olympiad Reasoning

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SCO International Maths Olympiad - Class 12 Official Syllabus

This syllabus is designed for advanced senior-secondary mathematical reasoning and Olympiad readiness. It integrates conceptual understanding, procedural fluency, real-life modelling, proof-oriented thinking, and multi-step problem solving.

Chapter-wise syllabus pathway

Chapter No.	Chapter Name	Enhanced International Learning Outcomes
1	Relations and Functions	Types of relations, equivalence relations, one-one and onto functions, composition of functions, invertible functions, and real-life mapping models.
2	Inverse Trigonometric Functions	Principal values, domain-range understanding, identities, simplification, and interpretation in geometry and measurement contexts.
3	Matrices	Types of matrices, operations, transpose, symmetric/skew-symmetric matrices, elementary operations, and matrix modelling.
4	Determinants	Determinants up to 3×3, minors, cofactors, adjoint and inverse, area of triangle, and solving linear equations.
5	Continuity and Differentiability	Limits, continuity, derivatives of standard functions, chain rule, implicit differentiation, logarithmic differentiation, and parametric forms.
6	Applications of Derivatives	Tangents and normals, rate of change, increasing/decreasing functions, maxima-minima, and optimization problems.
7	Integrals	Indefinite and definite integrals, substitution, partial fractions, integration by parts, and standard integration forms.
8	Applications of Integrals	Area under simple curves, area between two curves, and interpretation of accumulation in applied contexts.
9	Differential Equations	Order and degree, formation of differential equations, variable separable equations, and first-order linear differential equations.
10	Vector Algebra	Vector operations, scalar and vector products, projection, direction cosines, and geometric applications.
11	Three-Dimensional Geometry	Direction ratios/cosines, equations of lines and planes, angles, distances, and shortest-distance ideas.
12	Linear Programming	Constraints, feasible region, corner-point method, bounded/unbounded regions, and decision-making applications.

13	Probability	Conditional probability, multiplication theorem, total probability, Bayes theorem, random variables, and binomial distribution.

Olympiad skill outcomes

- Convert real-life situations into mathematical models using functions, matrices, derivatives, integrals, vectors, and probability.
- Apply multi-step reasoning rather than rote substitution, especially in Assertion-Reason and Achievers Section problems.
- Use calculus for rate, area, optimization, and accumulation; use vectors and 3D geometry for spatial reasoning.
- Interpret probability models, conditional information, and risk-based decisions in data-rich contexts.
- Build confidence for international assessments through structured explanations and case-based reasoning.

Suggested exam structure

General Mathematics	20 questions
Case Study	5 questions
Assertion-Reason	5 questions
Achievers Section	5 questions
Total	35 questions | 60 minutes

Preparation roadmap

Foundation review: Revise definitions, formulae, graph meaning, and standard results chapter-wise.

Application practice: Solve mixed problems from calculus, vectors, matrices, probability, and LPP.

Case-study readiness: Read context carefully, identify variables, and translate information into mathematical statements.

Error control: Check domains, signs, units, feasible-region boundaries, and conditional probability denominators.

Final revision: Use answer-key explanations to identify recurring mistakes and revise concept clusters.