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SCO INTERNATIONAL OLYMPIAD

CLASS 6 MATHS SYLLABUS

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

Designed from Class 6 Mathematics syllabus pathways and aligned with SCO's Olympiad preparation flow for guided practice, reporting, and future-ready mathematical reasoning.

- age-fit mathematics guidance for Class 6 learners globally
- chapter-wise pathways across numbers, geometry, data handling, mensuration, algebra, ratio and proportion
- preparation roadmap, implementation ideas, and future-benefit framing for academic excellence

Maths	Numbers	Geometry	Fractions	Data Handling
AI	Algebra	Ratio & Proportion	Symmetry	Olympiad Reasoning

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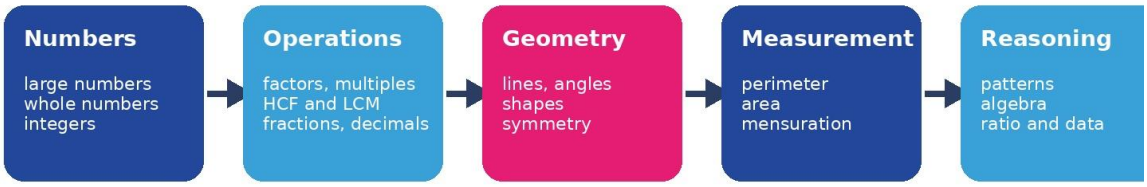
SCO International Maths Olympiad - Class 6 Syllabus

Official learning pathway for mathematical fluency, reasoning, geometry visualisation, and problem-solving confidence.

For Students	For Teachers	For Schools & Parents
Understand what to learn, why it matters, and how each topic appears in Olympiad-style reasoning.	Plan concept delivery, practice, classroom enrichment, and revision with clear learning outcomes.	Track readiness, support practice, and build a healthy mathematics culture through guided preparation.

Class 6 Maths Learning Pathway

From number fluency to visual reasoning, algebraic thinking, and real-life problem solving.



Olympiad skill build-up:

Observe patterns • choose a strategy • compute accurately • explain the reasoning • solve unfamiliar pr

Core Preparation Philosophy

- Concept clarity first: students should know the reason behind each method, not only the final formula.
- Practice should include real-life word problems, visual puzzles, pattern recognition, and multi-step reasoning.
- Olympiad readiness grows when students explain the steps they choose and check whether their answer is reasonable.

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Syllabus at a Glance

Chapter	Chapter Name	Learning Focus	Olympiad Skill
1	**Knowing our Numbers**	Read, compare, arrange, estimate and operate with large numbers.	Accuracy + reasoning + application
2	**Whole Numbers**	Understand zero, successors, predecessors and properties of operations.	Accuracy + reasoning + application
3	**Playing with Numbers**	Use factors, multiples, primes, divisibility, HCF and LCM.	Accuracy + reasoning + application
4	**Basic Geometrical Ideas**	Identify points, lines, rays, angles, polygons and circles.	Accuracy + reasoning + application
\5	**Understanding Elementary Shapes**	Classify angles, triangles, quadrilaterals and 3D shapes.	Accuracy + reasoning + application
6	**Integers**	Represent and operate with positive and negative numbers.	Accuracy + reasoning + application
7	**Fractions**	Compare, simplify, add, subtract and apply fractions.	Accuracy + reasoning + application
8	**Decimals**	Read, compare and operate with decimals in measurement and money contexts.	Accuracy + reasoning + application
9	**Data Handling**	Collect, organise, tabulate, graph and interpret data.	Accuracy + reasoning + application
10	**Mensuration**	Find perimeter and area of common plane figures.	Accuracy + reasoning + application
11	**Algebra**	Use variables, expressions and simple equations.	Accuracy + reasoning + application
12	**Ratio And Proportion**	Compare quantities, use ratios and apply unitary method.	Accuracy + reasoning + application
13	**Symmetry**	Identify and draw lines of symmetry in shapes and patterns.	Accuracy + reasoning + application

Chapter	Chapter Name	Learning Focus	Olympiad Skill
14	**Practical Geometry**	Construct basic shapes accurately using ruler, compass and protractor.	Accuracy + reasoning + application

Mathematical Skill Map

Class 6 learners move from number confidence to abstract reasoning and precise construction.

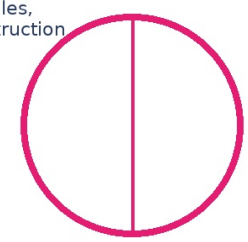
Numbers and Geometry: Two Core Strands

Number Sense

integers, fractions, decimals, ratios and calculations

Shape Sense

area, perimeter, angles, symmetry and construction



Expected Skill Progression

- Numerical fluency: compare, estimate and calculate with whole numbers, integers, fractions and decimals.
- Spatial reasoning: read shapes, angles, symmetry and constructions with visual clarity.
- Applied thinking: connect ratio, data, mensuration and algebra with real-life situations.
- Olympiad reasoning: identify patterns, eliminate distractors, use shortcuts carefully and justify answers.

Detailed Chapter Notes and Learning Outcomes

Each chapter block gives a quick understanding of the topic, expected student outcomes, classroom focus, and Olympiad application.

Chapter 1: Knowing our Numbers | Number Sense and Estimation

Chapter Note: This chapter builds confidence in reading, writing, comparing and estimating large numbers. It helps learners understand number systems used in daily life, population data, distances, costs and measurements.

Learning Outcomes	Core Learning Focus
• Read and write large numbers using Indian and international place-value systems. • Compare, arrange and estimate numbers in meaningful situations. • Use rounding and approximation to judge whether an answer is reasonable.	• Place value • Indian and international numeration • Comparison and ordering • Estimation and rounding

Olympiad Application: Population, money, travel distance, school records and data-based reasoning questions.

Chapter 2: Whole Numbers | Operations and Patterns

Chapter Note: Whole numbers introduce zero, successor, predecessor and number-line thinking. The chapter strengthens the foundation for arithmetic properties and mental calculation.

Learning Outcomes	Core Learning Focus
• Recognise whole numbers and represent them on a number line. • Use closure, commutative, associative and distributive properties in calculations. • Apply patterns to simplify arithmetic and check answers quickly.	• Zero and natural numbers • Successor and predecessor • Number line • Properties of operations

Olympiad Application: Mental maths, quick checks, sequence questions and operation-based puzzles.

Chapter 3: Playing with Numbers | Factors, Multiples and Divisibility

Chapter Note: This chapter develops the habit of seeing hidden structure in numbers. It is highly important for Olympiad questions because many problems can be solved faster by recognising divisibility, HCF, LCM and prime factors.

Learning Outcomes	Core Learning Focus
• Identify factors, multiples, prime and composite numbers. • Apply divisibility rules to classify and test numbers. • Use HCF and LCM in word problems involving grouping, cycles and repeated events.	• Prime and composite numbers • Divisibility tests • Prime factorisation • HCF and LCM

Olympiad Application: Scheduling, packaging, grouping items, bells ringing together and pattern-based divisibility questions.

Chapter 4: Basic Geometrical Ideas | Geometry Language

Chapter Note: Students learn the language of geometry: points, lines, rays, line segments, curves, angles, polygons and circles. This vocabulary supports precise drawing and reasoning in later chapters.

Learning Outcomes

- Distinguish between point, line, ray and line segment.
- Identify open and closed figures, polygons and parts of a circle.
- Use correct geometrical terms to describe figures and relationships.

Core Learning Focus

- Point, line, ray and segment
- Angles and curves
- Polygons
- Circle elements

Olympiad Application: Diagram-reading questions, figure classification and geometry vocabulary reasoning.

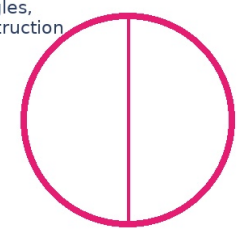
Numbers and Geometry: Two Core Strands

Number Sense

integers, fractions, decimals, ratios and calculations

Shape Sense

area, perimeter, angles, symmetry and construction



Chapter 5: Understanding Elementary Shapes | Angles, Triangles and 3D Shapes

Chapter Note: This chapter helps students classify shapes by measurable properties. Learners connect visual observation with angle measurement, types of triangles, quadrilaterals and solid figures.

Learning Outcomes	Core Learning Focus
• Measure and classify angles using reference angles and a protractor. • Classify triangles and quadrilaterals by sides and angles. • Recognise faces, edges and vertices of common 3D solids.	• Angle types • Triangles and quadrilaterals • 3D shapes • Faces, edges and vertices

Olympiad Application: Shape comparison, hidden angle reasoning, nets and solid-figure identification.

Chapter 6: Integers | Positive and Negative Numbers

Chapter Note: Integers extend number understanding beyond zero. Temperature, altitude, bank balance and direction-based examples help students understand positive and negative movement on a number line.

Learning Outcomes	Core Learning Focus
• Represent integers on a number line. • Compare and order positive and negative numbers. • Solve problems involving addition and subtraction of integers.	• Positive and negative numbers • Ordering integers • Integer number line • Addition and subtraction

Olympiad Application: Temperature changes, gains and losses, sea level, scores and step-movement puzzles.

Chapter 7: Fractions | Parts of a Whole

Chapter Note: Fractions support proportional thinking. Learners compare parts, simplify equivalent forms and perform operations with like and unlike denominators.

Learning Outcomes	Core Learning Focus
• Represent fractions visually and on a number line. • Compare and simplify equivalent fractions. • Add and subtract fractions in practical situations.	• Proper and improper fractions • Equivalent fractions • Comparison • Addition and subtraction

Olympiad Application: Sharing, recipes, distance, time, probability-style reasoning and diagram-based fractions.

Chapter 8: Decimals | Place Value with Fractions of Ten

Chapter Note: Decimals make measurement, money and data more precise. Students learn decimal place value and connect decimals with fractions in real-life contexts.

Learning Outcomes	Core Learning Focus
• Read and write decimal numbers correctly. • Compare and arrange decimals using place value. • Add and subtract decimals in money and measurement problems.	• Tenths, hundredths and thousandths • Decimal place value • Comparison • Addition and subtraction

Olympiad Application: Money, length, weight, distance, measurement conversion and data interpretation.

Chapter 9: Data Handling | Organising and Interpreting Data

Chapter Note: Data handling develops the ability to convert information into tables and graphs. Students learn to read patterns, compare values and make conclusions from organised data.

Learning Outcomes	Core Learning Focus
• Collect and arrange data using lists, tables and tally marks. • Read pictographs and bar graphs accurately. • Draw simple conclusions from data representations.	• Tally marks • Frequency tables • Pictographs • Bar graphs

Olympiad Application: Survey results, marks distribution, sports records, attendance and real-life comparison charts.

Chapter 10: Mensuration | Perimeter and Area

Chapter Note: Mensuration connects geometry with measurement. Students calculate perimeter and area for regular and composite shapes, making this chapter important for application-based Olympiad problems.

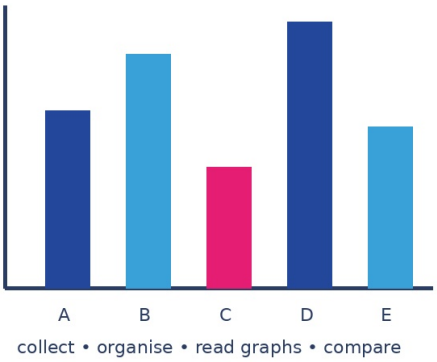
Learning Outcomes	Core Learning Focus
	• Perimeter

• Find perimeter of rectangles, squares and simple polygons. • Calculate area of rectangles and squares using standard units. • Solve real-life problems involving fencing, tiling and covering surfaces.	• Area • Units of measurement • Composite figures

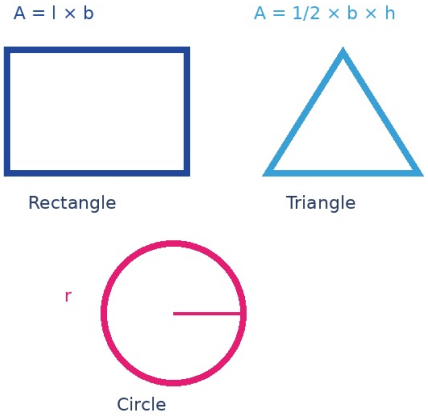
Olympiad Application: Garden fencing, floor tiling, field measurement, boundary cost and design layouts.

Data Handling and Mensuration in Real Life

Data Handling



Mensuration



Chapter 11: Algebra | Variables and Expressions

Chapter Note: Algebra introduces the use of letters to represent unknown values and patterns. It helps learners move from arithmetic to general reasoning.

Learning Outcomes	Core Learning Focus
• Use variables to represent unknown numbers and changing quantities. • Write simple algebraic expressions from statements. • Solve simple equations using logical steps.	• Variables • Expressions • Simple equations • Pattern generalisation

Olympiad Application: Age problems, number puzzles, perimeter formulas and rule-based sequences.

Chapter 12: Ratio And Proportion | Comparing Quantities

Chapter Note: Ratio and proportion train students to compare quantities multiplicatively. It is useful for recipes, maps, scaling, speed, cost and sharing questions.

Learning Outcomes	Core Learning Focus
• Write ratios in simplest form. • Compare quantities using ratio language. • Apply unitary method to solve proportion-based word problems.	• Ratio notation • Equivalent ratios • Unitary method • Proportion thinking

Olympiad Application: Recipes, scale drawings, price comparison, speed, mixture and distribution problems.

Chapter 13: Symmetry | Patterns and Visual Balance

Chapter Note: Symmetry strengthens visual reasoning and pattern recognition. Learners identify lines of symmetry in figures, letters, objects and regular shapes.

Learning Outcomes	Core Learning Focus
• Identify symmetrical and non-symmetrical figures. • Draw lines of symmetry in 2D shapes. • Recognise symmetry in patterns and designs.	• Line symmetry • Regular polygons • Mirror images • Pattern completion

Olympiad Application: Mirror puzzles, design patterns, shape completion and visual-reasoning questions.

Chapter 14: Practical Geometry | Construction Accuracy

Chapter Note: Practical geometry builds disciplined drawing skills. Students learn to use ruler, compass and protractor carefully and explain construction steps.

Learning Outcomes	Core Learning Focus
• Construct line segments, perpendiculars and angles accurately. • Use compass and protractor with proper steps. • Verify the constructed figure and explain the method used.	• Ruler and compass use • Angle construction • Perpendiculars • Verification

Olympiad Application: Construction tasks, diagram accuracy, step sequencing and geometry proof-readiness.

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Preparation Roadmap for Class 6 Maths Olympiad

A balanced plan strengthens concepts first and then moves toward Olympiad-level reasoning.

Stage	Focus Area	Action Plan
Stage 1	**Concept Foundation**	Read chapter notes, understand definitions, practise standard examples and maintain a formula notebook.
Stage 2	**Skill Practice**	Solve mixed questions from numbers, fractions, decimals, geometry, data and algebra with accuracy checks.
Stage 3	**Reasoning Build-up**	Use puzzles, pattern questions, case-based questions and diagram interpretation tasks.
Stage 4	**Timed Practice**	Attempt section-wise mock papers, review mistakes and improve speed without sacrificing accuracy.
Stage 5	**Final Revision**	Revise formulas, common traps, units, signs, diagram labels and step-by-step reasoning.

Classroom and School Implementation Ideas

For Teachers

- Begin each topic with a concrete example, then move to symbolic representation and Olympiad-style application.
- Use short diagnostic checks after every chapter to identify gaps in place value, operations, fractions, angles and units.
- Encourage students to explain why an answer is correct, not only how it was calculated.

For Schools

- Create a chapter-wise practice calendar covering all 14 chapters with at least two mixed-revision sessions every month.
- Use data from class practice tests to identify topic clusters needing support: numbers, geometry, fractions, mensuration, algebra or data handling.

- Promote a positive mathematics culture through puzzles, mental-math challenges, diagram tasks and peer explanation rounds.

For Parents

- Support regular short practice rather than last-minute long sessions.
- Ask students to explain the method in their own words after solving a problem.
- Use everyday situations such as shopping, cooking, travel distance, sports scores and calendars to discuss numbers, decimals, ratios and data.

Readiness Checklist

Students are well prepared when they can solve accurately, explain clearly, and handle unfamiliar questions calmly.

Skill Area	Readiness Indicator	Status
Number Fluency	Reads, writes, compares and estimates large numbers confidently.	☐ Ready ☐ Needs Practice
Operation Accuracy	Uses properties of whole numbers and operations to calculate efficiently.	☐ Ready ☐ Needs Practice
Factors and Multiples	Applies divisibility, HCF and LCM to word problems.	☐ Ready ☐ Needs Practice
Fraction and Decimal Confidence	Compares, converts and operates with fractions and decimals.	☐ Ready ☐ Needs Practice
Geometry Vocabulary	Identifies lines, angles, polygons, circles and 3D shape elements.	☐ Ready ☐ Needs Practice
Mensuration Skills	Calculates perimeter and area with correct units.	☐ Ready ☐ Needs Practice
Algebraic Thinking	Uses variables and simple equations to represent situations.	☐ Ready ☐ Needs Practice
Data Interpretation	Reads tables, tally marks, pictographs and bar graphs.	☐ Ready ☐ Needs Practice
Ratio Reasoning	Compares quantities and applies unitary method.	☐ Ready ☐ Needs Practice

Skill Area	Readiness Indicator	Status
Visual Reasoning	Recognises symmetry and completes patterns.	☐ Ready ☐ Needs Practice
Construction Discipline	Uses ruler, compass and protractor carefully with clean steps.	☐ Ready ☐ Needs Practice
Olympiad Strategy	Eliminates wrong options, checks units and justifies reasoning.	☐ Ready ☐ Needs Practice

Final Learning Message

- Mathematics becomes stronger when students observe patterns, ask questions, test methods and learn from mistakes.
- The SCO International Maths Olympiad Class 6 syllabus is designed to support concept mastery, confidence and future-ready reasoning.
- Regular practice, neat working, clear explanation and honest review are the strongest preparation habits.