ICSE GRADE 5 MATHEMATICS SYLLABUS

2025-2026 Academic Year

Indian Certificate of Secondary Education (ICSE) - Official Curriculum

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Overview

The ICSE Mathematics syllabus for Grade 5 is designed to develop comprehensive mathematical understanding in students, building upon foundational concepts and introducing more complex problem-solving skills. The curriculum emphasizes conceptual understanding alongside computational fluency.

Theme 1: Numbers

Content

Place Value and Number Sense

- Understanding place value up to ten lakhs (1,000,000)
- Reading and writing numbers in Indian and international systems
- Comparison and ordering of large numbers
- Expanded form and short form of numbers
- Face value and place value concepts

Natural Numbers and Whole Numbers

- Properties of whole numbers
- Understanding successor and predecessor
- Number line representation
- Counting in different patterns (skip counting)
- Concepts of even and odd numbers

Roman Numerals

- Reading and writing Roman numerals up to MMMCMXC (3,990)
- Converting between Hindu-Arabic and Roman numerals
- Understanding symbol usage and subtraction principle

Theme 2: Number Operations

Content

Addition and Subtraction

- Addition and subtraction of numbers up to 10 lakhs
- Word problems involving addition and subtraction
- Estimating sums and differences
- Properties of addition (commutative, associative)
- Checking answers using inverse operations

Multiplication

- Multiplication of numbers up to 5 digits by 3-digit numbers
- Lattice method and conventional method
- Properties of multiplication (commutative, associative, distributive)
- Estimation of products
- Word problems based on multiplication
- Introduction to exponents (squares and cubes of small numbers)

Division

- Division of 5-digit numbers by 2-digit divisors
- Long division algorithm with remainders
- Estimation of quotients
- Checking division using multiplication
- Word problems involving division
- Relationship between dividend, divisor, quotient, and remainder

Order of Operations

- BODMAS/PEMDAS rule
- Solving expressions with mixed operations
- Using brackets and parentheses correctly

Theme 3: Fractions and Decimals

Content

Fractions

- Concept of fractions (proper, improper, mixed numbers)
- Fraction notation and representation on number line
- Equivalent fractions
- Comparing and ordering fractions with same and different denominators
- Addition and subtraction of fractions (like and unlike denominators)
- Multiplication of fractions by whole numbers
- Fraction of a quantity
- Word problems involving fractions

Decimals

- Concept of decimals as fractions with denominator 10, 100, 1000
- Reading and writing decimals
- Place value in decimals (tenths, hundredths, thousandths)
- Comparing and ordering decimals
- Converting between fractions and decimals

- Addition and subtraction of decimals
- Multiplication and division of decimals by whole numbers
- Word problems involving decimals
- Use of decimals in context of money and measurement

Theme 4: Playing with Numbers (Factors and Multiples)

Content

Factors and Multiples

- Concept of factors and multiples
- Finding all factors of a given number
- Finding first 10 multiples of a number
- Common factors
- Prime and composite numbers
- Sieve of Eratosthenes method

Divisibility

- Divisibility tests for 2, 3, 4, 5, 6, 8, 9, and 10
- Using divisibility rules in number problems

HCF and LCM

- Prime factorization method
- Finding HCF (Highest Common Factor)
- Finding LCM (Lowest Common Multiple)
- Euclid's algorithm for HCF (introduction)
- Application of HCF and LCM in real-world situations
- Word problems involving HCF and LCM

Theme 5: Introduction to Negative Numbers

Content

Understanding Negative Numbers

- Concept of negative numbers in real-life contexts (temperature, money, elevation)
- Representation on number line
- Comparing positive and negative numbers
- Integers and ordering of integers
- Addition and subtraction with negative numbers (introductory level)
- Simple word problems involving negative numbers

Theme 6: Geometry

Content

Basic Geometrical Ideas

- Point, line, line segment, and ray
- Naming conventions for lines and points
- Open and closed figures
- Interior and exterior of a figure
- Curves: simple, closed, and non-closed

Understanding Elementary Shapes

- Angles: concept, vertex, arms, interior and exterior
- Types of angles: acute, right, obtuse, straight, reflex, complete
- Measurement of angles using protractor
- Pairs of angles: complementary and supplementary

Polygons

- Concept of polygons and their classification
- Triangles: types (scalene, isosceles, equilateral) and properties
- Quadrilaterals: types (rectangle, square, parallelogram, rhombus, trapezium)
- Properties of rectangles, squares, and other quadrilaterals
- Polygons: naming convention, number of sides and angles

Circles

- Basic concept and terminology (center, radius, diameter, circumference)
- Drawing circles with given radius
- Properties of circles

3D Shapes Introduction

- Solids: cuboids, cubes, cylinders, spheres, cones
- Identification and naming of 3D shapes
- Faces, edges, and vertices
- Introduction to nets of 3D shapes

Theme 7: Measurement

Content

Length and Distance

- Metric units: mm, cm, m, km
- Conversion between metric units
- Measurement using standard instruments
- Estimation of length and distance
- Word problems involving length

Mass/Weight

- Metric units: g, kg
- Conversion between grams and kilograms
- Weighing using standard weights
- Estimation of mass
- Word problems involving weight

Capacity/Volume

- Metric units: ml, l
- Conversion between milliliters and liters
- Measurement using standard containers
- Estimation of capacity
- Word problems involving capacity

Time

- Reading and writing time (12-hour and 24-hour format)
- Conversion of hours, minutes, and seconds
- Calendar: days, weeks, months, years
- Leap years and simple date calculations
- Time intervals and duration
- Word problems involving time

Perimeter and Area

- Concept of perimeter
- Perimeter of rectangles and squares
- Calculating perimeter of irregular shapes
- Concept of area and square units
- Area of rectangles and squares
- Relationship between perimeter and area
- Word problems involving perimeter and area

Money

- Indian currency: rupees and paise
- Coins and notes
- Conversion between rupees and paise
- Addition and subtraction with money
- Real-life word problems involving money

Theme 8: Introduction to Percentage

Content

Understanding Percentage

- Concept of percentage as a fraction with denominator 100
- Notation and representation (%)
- Converting fractions to percentages
- Converting percentages to fractions
- Converting decimals to percentages

- Finding percentage of a quantity
- Simple applications: discounts and profit/loss (basic)
- Word problems involving percentages

Theme 9: Data Handling

Content

Collection and Organization of Data

- Methods of collecting data: survey, questionnaire, observation
- Organizing data in tables
- Frequency distribution
- Tally marks

Representation of Data

- Pictographs with different scales
- Bar graphs: reading and construction
- Simple line graphs
- Pie charts: understanding representation (reading only)
- Choosing appropriate graph for given data

Interpretation of Data

- Reading information from tables and graphs
- Extracting data from graphs
- Making simple conclusions from data
- Real-life applications

Basic Statistics

- Mean (average) of given data
- Median of a set of numbers
- Mode of a data set
- Simple problems involving mean, median, and mode
- Application in real-world contexts

Theme 10: Patterns

Content

Number Patterns

- Identifying number patterns
- Arithmetic sequences
- Finding missing numbers in patterns
- Extending sequences
- Creating patterns with given rules

Geometric Patterns

- Visual patterns in shapes and designs
- Pattern extension in geometric figures
- Symmetry in patterns
- Line of symmetry
- Rotational symmetry (introductory)

Patterns in Real Life

- Patterns in nature
- Cultural patterns
- Creating original patterns

Learning Outcomes

By the end of Grade 5, students should be able to:

✓ Understand place value up to ten lakhs and perform operations confidently
✓ Apply properties of numbers in solving mathematical problems
✓ Work with fractions and decimals in practical situations
✓ Identify factors, multiples, HCF, and LCM
✓ Understand negative numbers in context
✓ Identify geometric shapes and their properties
✓ Measure length, mass, capacity, and time accurately
✓ Calculate perimeter and area of shapes
✓ Represent and interpret data using graphs and charts
✓ Understand percentages and their applications
✓ Recognize and extend various patterns
✓ Solve word problems using multiple mathematical concepts

Assessment

Components

- Internal Assessment: Class tests, assignments, projects
- Periodic tests during academic year
- Final examination (summative assessment)

Skills Evaluated

- Conceptual understanding
- Procedural fluency
- Application and reasoning
- Problem-solving ability
- Mathematical communication

Recommended Resources

Prescribed Textbook: Mathematics textbook as recommended by ICSE board for Grade 5

Additional Materials:

- Reference books for conceptual clarity
- Online educational platforms approved by ICSE
- Mathematics manipulatives for hands-on learning
- Geometry tools: compass, scale, protractor, set squares

Important Notes

- This syllabus is based on the official ICSE curriculum for academic year 2025-2026
- The order of topics may be adapted by schools based on their academic calendar
- Integration of topics across themes is encouraged for better understanding
- Focus on conceptual understanding alongside computational skills is essential
- Real-world applications and project-based learning are recommended

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