Tamil Nadu Curriculum Framework 2025

Proposed Draft Syllabus, Pedagogical Approaches and Assessment Strategies

Mathematics - Classes 1-5

The central goal of education at the primary level is to make children feel safe and comfortable in the presence of a caring adult, and feel free to explore, and make sense of the world around them. In mathematics classes, they explore the world through counting, measurement, numbers, patterns and shapes. Children develop confidence in learning to establish clear connections between numbers, quantities and relations. They develop their ability to describe, draw and arrange different shapes, using appropriate vocabulary. They learn to use a range of measures to compare different quantities such as length, heaviness, capacity, duration and money. They learn to present and depict given information in an orderly fashion.

The mathematics curriculum places importance on children's spoken language in their development. The quality of language they speak at primary school is a key factor in developing their mathematical vocabulary and learning to express their reasoning. Children need to be assisted in making their reasoning clear to themselves and to others. For the children to build strong mathematical foundations, it is important that they participate in class discussions, so that teachers can understand their confusions and address them immediately.

In classes 1 and 2, children develop initial number sense before learning to count systematically. They express a variety of comparison relations and experience the notions of number, quantities, relations and shapes using their bodily senses, working with concrete objects and with abstract visuals.

In classes 3 to 5, they develop a strong foundation in arithmetic, developing procedural fluency along with the ability to reason about the procedures they use. They learn to measure quantities and develop spatial sense along with a taste for symmetry. They develop confidence in their ability to solve mathematically posed problems.

Proposed Draft Syllabus - Mathematics (Classes 1, 2)

CG-1 Children make sense of their surroundings through mathematics using numbers, shapes, and measurements. They develop a sense of quantity and its verbal expression.		
Competency	**Content**	
	Class-1	**Class-2**
C-1.1 Observes, describes and distinguishes spatial relationships of things around them	• Observes different contexts and situations from the environment and use spatial vocabulary / concepts like on - under, above - below, far - near, top - bottom, inside - outside, before - after	

C-1.2 Describes noticed shapes and draws; learns perfect geometric shapes	• Draws shapes of trees, flowers etc • Points to abstract shapes, learns their names	• Describes familiar 3-D shapes • Draws views of familiar 3-D shapes
C-1.3 Groups objects using two or more attributes or properties	• Classifies objects such as leaves, seeds, beads, pebbles, buttons, etc based on colour, size (big-small, biggest-smallest) and shape (similar) • Classifies objects based on the observable attributes like flat and round • Classifies objects based on the features like rolling and sliding • Identifies straight lines and curved lines in objects found in the environment such as blackboard, pen, pencil, bangle, ball, etc.	• Classifies objects such as chalk box, gift box, drum, ball, ice cone, Rubik's cube etc based on flat and round/curved surfaces, straight and round/curved edges and corners • Identifies and names 3-D shapes • Classifies 2-D shapes based on their properties such as sides and corners • Identifies and names 2-D shapes • Formation of 2-D shapes from 3-D objects through shadows, impressions and tracing
C-1.4 Observes, identifies, and extends basic patterns in everyday surroundings	• Patterns in colours • Patterns in lines, dots etc • Patterns in body movements (shape and position)	• Patterns in shapes • Block patterns
C 1.5 Learns to order and arrange, developing intuition of number	• Compares "more" and "less" • Arranges by visual comparisons, understands "least" and "most" • Learns to count and arrange up to 20 • Reorders quantities by number	• Counts objects in groups of 10, 20, or 30, up to 99 • Arranges objects in multiples of 10s • Orders quantities by number, learns to arrange them in ascending / descending order
C-1.6 Understands the process of counting in the given set of objects	• Counts objects up to 50 • Counts objects up to 20 both forward and backward	• Counts objects up to 99 both forward and backward
C-1.7 Represents numbers up to 20 using the place-value system, reads number and number names, recognizes patterns in numbers; understands zero as a number	• Reads and writes the numbers up to 50 • Patterns in numbers up to 20 • Introduction to zero (absence of quantity)	• Reads and writes the numbers and number names up to 99 • Compares, orders and forms numbers up to 99 • Patterns in numbers up to 99
C-1.8 Develop and use strategies for number computations on addition, subtraction and understands situation that lead to multiplication and division	• Estimates the sum and difference of numbers • Addition (sum not exceeding 20) • Subtraction (up to 20)	• Estimates the sum and difference of numbers • Addition (sum not exceeding 99) • Subtraction (up to 99) • Multiplication as repeated addition (represents with objects and pictures) • Division as equal sharing (represents with objects and pictures)

C-1.9 Measures the length, weight, and capacity of familiar objects in their surroundings using simple activities	• Compares and orders objects based on length, weight and capacity (long - short; longest-shortest; tall - short; tallest-shortest; near – far; nearest – farthest; heavy - light; heaviest-lightest; thick - thin; thickest - thinnest; more - less; most -least (capacity); more – less; most - least (quantity))	• Measures length, weight and capacity using non- standard tools (hand span, cubit, foot span, pace, cups, containers and simple balance)
C-1.10 Compare sequences and cycles of events and describe their duration using familiar units of time including years, months, weeks, days and hours	• Sequence times of the day including morning, lunchtime, afternoon and night time, and connect them to familiar events and actions • Long and short time activities	• Days of the week • Months of the year • Clock time in hours • More time-Less time
C-1.11 Handles simple transactions involving amounts up to ₹99	• Plays with coins and currency using stories	• Different combinations of an amount up to ₹99 • Addition and subtraction problems involving money up to ₹99
C-1.12 Collects, records (using pictures/numerals) and interprets simple information by observing at visuals	• Collects, represents and interprets simple data (for example, observes at different flowers in a picture of a garden and draws conclusions as more than / less than / equal to)	• Represents and draws inferences from the data (for example, observing students arriving at school in different modes of travel as more than / less than / equal to, most – least)
C-1.13 Develops computational thinking through problem solving strategies	• Assembling parts • Following instructions based on directions (straight, right, left, upward, downward)	• Arranging pictures • Framing instructions based on directions (straight, right, left, upward, downward, east, west, north, south) • Puzzles (numbers, shapes and measurements)

Proposed Draft Syllabus - Mathematics (Classes 3, 4 & 5)

CG-2 Develops fluency with whole numbers expressed as Indo-Arabic numerals, and the four basic arithmetical operations on them, including number facts and the concept of place value, simple fractions and their comparison.			
Competency	**Content**		
	Class-3	**Class-4**	**Class-5**
C-2.1 Represents numbers using the place-value system, understands the significance of zero, compares numbers, and reads the number names	• Visualises numbers up to 999, learns to estimate them • Reads number names up to 999 based on place value • Learns to write numbers as combinations of different units	• Numbers and number names up to10000 based on the place value • Orders, sequences and compares numbers up to 10000	• Numbers and number names beyond 10000 based on the place value • Orders, sequences and compares numbers beyond 10000

	• Compares and orders numbers up to 999; identifies intervals (in 10s and 100s) within which a given number lies • Reasons about quantities in hundred and tens • Forms greatest and smallest numbers with given digits • Plays with numbers and identifies patterns	• Reasons about quantities in thousands, hundreds and tens • Forms greatest and smallest numbers with given digits • Counts objects arrays in ordered and unordered arrangements • Plays with numbers and identifies patterns in numbers and operations	• Estimates large numbers using multiplicative processes (like leaves on a tree) and identifies closest in thousands, hundreds etc • Plays with numbers and identifies patterns in numbers and operations
C-2.2 Represents and compares commonly used fractions in daily life (e.g.,$\frac{1}{2}, \frac{1}{4}$) as parts of a whole,as points on a number line and as divisions of whole numbers	• Identifies fractions used in everyday life using words • Understands fractions as equal share	• Fractions by Paper-folding • Fractional parts by shading and colouring • Dividing the given shape into equal parts • Simple unit fractions (¼,1/2.1/3,1/5) as part of whole	• Understands the part-whole relationship • Reasons with fractions as being less than or greater than 1 • Equivalent fractions using paper folding, colouring and shading • Comparing fractions using activity and material (not as algorithm) • Comparing fractions with reference to 1 • Comparing fractions with reference to $\frac{1}{2}$ • Addition and subtraction of fractions using activity and material (not as algorithm)
C-2.3 Visualises and recognizes relationships among operations and applies the four basic operations on numbers to solve real-life problems	• Estimates the sum and difference of numbers • Recognises the relationship between addition and subtraction through contexts and activity • Addition and subtraction up to 999 • Skip counting and construction of multiplication tables of 2, 3, 4, 5 and 10 through equal	• Addition and subtraction up to 10000 in contexts; in abstract form • Estimation (estimate the sum and difference by rounding off to nearest 10) • Skip counting and construction of multiplication tables of 6, 7, 8 and 9 • Visualisation of tables	• Addition and subtraction beyond 10000 • Estimation (estimate the sum and difference by rounding off to nearest 10 and 100) • Estimates results of operations up to nearest 10 and 100 • Multiplication of a three digit number by a two digit number, multiplication of a four digit number by a single

	groups • Multiplication of single digit numbers • Construction of division facts through equal sharing/ grouping and repeated subtraction) • Recognises the relationship between multiplication and division through contexts and activity • Constructs stories involving the operations	• Construction of multiplication facts • Understanding multiplication by 10 • Multiplication of a two digit number by a single digit number, multiplication of a two digit numbers, multiplication of a three digit number by a single digit number • Understanding doubling and halving and splitting • Division of a two digit number by a single digit number, division of a three digit number by a single digit numbers • Identifying patterns in operations	digit number · Division of a three digit number by a two digit number, division of a four digit number by a two digit number, division of a four digit number by a single digit number (Use multiple approaches for multiplication and division before introducing procedures) • Identifies patterns in number grids, multiplication tables • Understands powers of 10 seen so far, and all four operations on them (e.g. learning 1000 + 10 correctly)
C-2.4 Handles simple transactions involving money	• Different combinations of notes up to Rs 500 • Addition and subtraction problems involving money	• Solving problems involving money using four basic operations (price list)	• Solving problems involving money using four basic operations (bills) as needed and estimation
C-2.5 Identifies, describes and extends simple number patterns, including odd and even numbers, square and triangular numbers	• Patterns in numbers • Odd and even numbers • Recognizes the patterns in addition or subtraction of odd and even numbers	• Odd and even numbers • Order of numbers in multiplication • Recognises patterns in multiplication of odd and even numbers • Patterns in multiplication (5x10, 5x100, 5x1000) • Patterns in division (9÷3, 90÷3, 900÷3, 9000÷3)	• Multiples and common multiples • Factors and common factors • Patterns in multiplication • Patterns in division- Dividing by 10 and 100. • Square and triangular numbers • Palindrome numbers

CG-3 Explores and expresses the attributes and qualities of 2D and 3D shapes, describes and depicts spatial relationships and locations, recognises and constructs symmetrical forms.			
Competency	**Content**		
	Class-3	**Class-4**	**Class-5**
C-3.1 Identifies, compares and analyzes attributes of two-and three-dimensional shapes and uses appropriate vocabulary to describe their properties	• Recognises shapes in different orientations • Properties of 2-D shapes (square, rectangle, triangle and circle) using sides and corners • Draws / makes the 2-D shapes • Classifying 3-D shapes based on faces (flat and curved surface), edges (straight and • curved) and corners • Models objects using these shapes • Tangrams	• Properties of 2-D shapes (square, rectangle and triangle diagonals; circle - centre, radius, diameter) • Tiling a region using given 2-D shapes • Making 3-D shapes using nets (net of a cube, net of a cuboid, net of a cylinder) • Drawing cubes on a triangular dot paper • Top view, side view and front view of a 3-D object • Models objects using these shapes	• Identify angles in things around us using turns • Angles through clocks and time reading • Understands importance of 90 degrees, recognises angles as smaller or bigger than 90 • Understands clockwise and anticlockwise movement • Creating and extending tiling and tessellation patterns
C-3.2 Describes location and movement using common and mathematical language; understands the concept of a map	• Using directions to orient and move • Describing position and location in a simple route map (home to school)	• Describes location of objects in a grid • Reading local maps • Tracing routes for the given locations	• Applies map to real-life situations (park, market, bus stand/ railway station in kilometres) • Describes maps using directions • Constructs schematic maps
C-3.3 Recognizes and creates symmetry, including reflection and rotation, in familiar two-and three-dimensional shapes	• Appreciates symmetry through examples in nature • Symmetry	• Symmetrical shapes through paper folding and mirror • Lines of Symmetry	• Turns • Reflection • Creating patterns with rotation, reflection symmetry
C-3.4 Identifies, describes, and extends patterns in two-and three dimensional shapes	• Repeating patterns	• Growing patterns using symmetry • Creating patterns with dots and circle	• Uses patterns to decode messages involving alphabet and numerals

CG-4 Learns to measure attributes such as distance, length, weight, area, capacity and time using both standard and non-standard units, relating measure and number.			
Competency	**Content**		
	Class-3	**Class-4**	**Class-5**
C-4.1 Measures using both non-standard and standard units and understands the importance of standard units	• Need for standard measurements		
C-4.2 Selects and uses suitable units and tools for measuring different attributes of the objects and evaluates the conservation of attributes like length and volume	• Decides which unit to use when • Length: metre, half metre, quarter metre, more than / less than 1 metre, using measuring tape • Conservation of length • Weight: kilogram, more than/ less than 1 kilogram, using simple balance • Capacity: more than / less than 1 litre, half litre, quarter litre, using measuring containers • Conservation of volume (same quantity of liquid in different containers)	• Measuring length of the objects (centimetre) using a scale • Measuring weight of the objects (gram) using weighing balance • Measuring capacity of the vessels (millilitre) using measuring containers • Estimates, measures and verifies	• Measuring length of small objects (millimetre) using a scale • Measuring weight of the small objects (milligram) using weighing balance • Estimates, measures and verifies • Solves problems involving measures
C-4.3 Performs simple unit conversions within a measurement system (e.g.,centimetres to metres) and applies them to solve everyday problems		• Conversion of units: metres, centimetres, kilograms, grams and litres, millilitres • Measurement-related application problems using addition and subtraction	• Conversion of units: metres, centimetres, millimetres and kilograms, grams, milligrams Measurement-related application problems using the four basic operations
C-4.4 Develops strategies to estimate time	• Reading a particular day and date • Number of days in each month • Number of days in a year • Clock time in hours and minutes	• Normal year and leap year • Compute the number of days between the two given dates • A.M and P.M • Time duration in hours • Solve problems involving time in daily life contexts using addition and subtraction	• Normal time and railway time, 12 hour clock - 24 hour clock • Conversion: hours into minutes, minutes into seconds,minutes into hours,seconds into minutes • Time duration in hours and

			minutes • Solve problems involving time in daily life contexts using multiplication and division
C-4.5 Develops strategies to estimate perimeter (for regular and irregular shapes) and area (for regular and irregular shapes)		• Tessellations (tiles and cards)	• Perimeter and area of regular (rectangle and square using grid) and irregular shapes • Shapes with equal areas can have different perimeters and shapes with equal perimeters can have different areas

CG-5 Develops a taste for solving problems posed as puzzles, arithmetical stories and mathematical contexts from everyday life, with opportunities for computational thinking.			
Competency	**Content**		
	Class-3	**Class-4**	**Class-5**
C-5.1 Collects data related to various daily life situations, represents it in tabular form and as pictograph, bar graphs and interprets it	• Use tally marks to collect data, answers questions and classifies by grouping	• Learns to record data • Depicts data in the form of pictograph and tables, relates the two • Reasons about data	• Constructs and interprets bar graphs, appreciates the need for different depictions
C-5.2 Develops the ability to systematically determine and list of all possible arrangements within given constraints	• Systematic listing - listing of all possible choices	• Systematic counting - combinations with conditions	• Learns to construct arrangements with given constraints
C-5.3 Chooses suitable methods - mental computation, estimation or written calculation – for working with numbers, depending on the context	• Multiple ways of adding • Multiple ways of subtracting • Solves puzzles	• Multiple ways of multiplication • Solves puzzles	• Multiple ways of division • Sudoku (4×4) • Solves puzzles

Pedagogical Approaches

Whether it be in the development of number sense, spatial sense or time sense, the progression of learning takes place through games and activities with concrete material first, estimation and description next, then mental arithmetic, before symbolic arithmetic is used. Bodily movement and sensing, material handling, observing, noticing and spoken expression come before symbols are read / written. Children work in pairs and threes before working on their own in classes 1 to 3, with greater time for individual learning in classes 4 and 5.

We can envisage mathematics as being taught in an *activity medium*, with a range of activities that engage the child in conversation, story narration, playing with toys, drawing, singing and craft making. Content is integrated into such activity rather than viewed separately and classroom processes are designed to elicit maximum engagement. Ensuring that the child feels as safe and comfortable as at home, and at the same time experiences the joy of social interaction, is critical, especially for classes 1 and 2. The abstract notions of number and shape are built by the child through making logical connections and strengthened by variation. Since speaking and listening are principal modes of communication in the classroom the child's language and expression take precedence over mathematical language as used in the textbook, while at the same time the child is encouraged to use mathematical vocabulary. Problem solving is also best done orally and through activity, gradually moving to problems posed in the written from class 3 onwards. Developing a positive attitude towards mathematics and building confidence in the child is a priority.

Assessment Strategies

It should be noted that assessment is principally *assurance* at the primary stage: the idea is to *ensure* that every child attains sustainable levels of literacy and numeracy, develops mathematical thinking and expression. Hence, a portfolio record that maps the trajectory of every child across terms and competencies is more valuable than summative evaluation expressed as marks. Assessment is also through activities and problems meaningful to children's lived experiences, addressing multiple learning levels and trajectories in the classroom. Teachers need to shift their expectation away from the "one right answer, got by the one method given in the textbook", to observing how each student is reasoning and expressing their thinking.