## Mathematics Syllabus Classes I - V

| Class I | Class II | Class II | Class IV | Class V |
| :---: | :---: | :---: | :---: | :---: |
| Geometry (10 hrs.) <br> Shapes \& Spatial <br> Understanding <br> - Develops and uses vocabulary of spatial relationship (Top, Bottom, On, Under, Inside, Outside, Above, Below, Near, Far, Before, After) <br> Solids around us <br> - Collects objects from the surroundings having different sizes and shapes like pebbles, boxes, balls, cones, pipes, etc. <br> - Sorts, Classifies and describes the objects on the basis of shapes, and other observable properties. <br> - Observes and describes the way shapes affect movements like rolling and sliding. <br> - Sorts 2 - D shapes such as flat objects made of card etc. | Geometry (13 hrs.) Shapes \& Spatial <br> Understanding <br> 3-D and 2-D Shapes <br> - Observes objects in the environment and gets a qualitative feel for their geometrical attributes. <br> - Identifies the basic 3-D shapes such as cuboid, cylinder, cone, sphere by their names. <br> - Traces the 2-D outlines of 3-D objects. <br> - Observes and identifies these 2-D shapes. <br> - Identifies 2-D shapes viz., rectangle, square, triangle, circle by their names. <br> - Describes intuitively the properties of these 2-D shapes. <br> - Identifies and makes straight lines by folding, straight edged objects, stretched strings and draws free hand and with a ruler. <br> - Draws horizontal, vertical | Geometry (16 hrs.) Shapes \& Spatial <br> Understanding <br> - Creates shapes through pape folding, paper cutting. <br> - Identifies 2-D shapes (squar rectangle, triangle, circle). <br> - Describes the various 2-D shapes by counting their sides corners and diagonals. <br> - Makes shapes on the dotgrid using straight lines and curves. <br> - Creates shapes using tangram pieces. <br> - Matches the properties of two 2-D shapes by observing their sides and corners (vertices). <br> - Tiles a given region using a tile of a given shape. <br> - Distinguishes between shapes that tile and that do not tile. <br> - Intuitive idea of a map. Reads simple maps (not necessarily scaled) <br> - Study of the net of a cuboid | Geometry (16 hrs.) Shapes \& Spatial <br> Understanding <br> - Draws shapes and patterns free hand and with compass. <br> - Uses Tangrams to create different shapes. <br> - Tiles geometrical shapes: using one or two shapes. <br> - Chooses a tile among a given number of tiles that can tile a given region both intuitively and experimentally. <br> - Explores intuitively the area and perimeter of simple shapes. <br> - Makes 4-faced, 5-faced and 6 - faced cubes from given nets especially designed for the same. <br> - Explores intuitively the reflections through inkblots, paper cutting and paper folding. <br> - Reads and draws 3-D objects, making use of the familiarity with the | Geometry <br> ( 16 hrs.$)$ Shapes \& Spatial <br> Understanding <br> - Gets the feel of perspective while drawing a 3-D object in 2-D. <br> - Explores intuitively rotations and reflections of familiar 2-D shapes. <br> - Explores intuitively symmetry in familiar 3-D shapes. <br> - Makes the shapes of cubes, cylinders and cones using nets especially designed for this purpose. <br> - Gets the feel of an angle through observation and paper folding. <br> - Identifies right angles in the environment. <br> - Classifies angles into right, acute and obtuse angles. <br> - Represents right angle, acute angle and obtuse angle by drawing and tracing. <br> - Identifies angles found in polygon |


|  | and slant lines (free hand). <br> - Distinguishes between straight and curved lines. <br> - Identifies objects by observing their shadows. | and it's shapes. <br> - Tracing circles with differen objects. | conventions used in this. - Draws intuitively the plan, elevation and side view of simple objects. | - Point, line, vertex, ray exterior and interior angles. <br> - Identifies centre and radius and interior, exterior of a circle. <br> - Drawing lines of given lengths. |
| :---: | :---: | :---: | :---: | :---: |
| Numbers (46 hrs.) | Numbers (46 hrs.) | Numbers (42 hrs.) | Numbers (40 hrs.) | Numbers (40 hrs.) |
| Developing a sense of | - Reads and writes numerals | Number sequence upto 1000 | Numbers and Operations | Numbers and operations |
| Numberness, Counting and | for numbers up to ninety | - Reads and writes 3-digit | - Reads and write Number up | - Finds place value in |
| Operations of Numbers 1-9 | nine. | numbers. | to 10,000 | numbers up to lakh and ten |
| and zero | - Expands a number with | - Expands a number w.r.t. | - Add \& sub up to 10,000 | lakhs. |
| - Observes object and make | respect to place values. | place values. | - Writes multiplication facts. | - Multiply 10's, 100's, |
| collections of objects | - Counts and regroups | - Counts in different ways | - Tables upto $10 \times 10$. | 1000's |
| objects in order by | objects into tens and ones. <br> - Uses the concept of place | starting from any number. <br> - Compares numbers. | $\text { - Multiply by } 10 \text { 's, } 100 \text { 's, }$ $10,000 \text { 's }$ | - Multiplication of 3 digit number by 2 digit numbers. |
| - One to one correspondence <br> - Matching and | value in the comparison of numbers. | - Forms greatest and smallest numbers using given digits. | - Multiplies two and three digit numbers using lattice | - Uses informal and standard division algorithms by two- |
| - Introduction of number (15) | - Counts in various ways: | Addition and Subtraction | algorithm and the standard | digit number ( $5<20$ ). |
| - Counts the number of | - Starting from any number. <br> - Group counting etc. | - Adds and subtracts numbers by | (column) algorithm by single digit and two digit. | - Appreciates the role of place value |
| objects in a collection. <br> - Makes collection of objects | - Arranges numbers upto | writing them vertically in the | - Divides a given number by | in addition, subtraction and |
| corresponding to a specific | hundred in ascending and descending order. | following two cases: <br> - without regrouping. | another number in various ways | multiplication and division algorithms. |
| number. | - Forms the greatest and the | - with regrouping. | such as: | - Explains the meaning of |
| - Intriduction of numbers(6-9) | smallest two digit numbers | - Uses the place value in | - by repeated subtraction. | factors and multiples. |
| numbers from 1 to 9 . | with and without repetition of given digits. | standard <br> algorithm of | - by grouping. <br> - by using multiplication | - Prime, Composite, <br> - LCM, HCF |
| - Uses numbers from 1 to 9 in counting and comparison. (Real objects and | - Indicates and identifies the position of an object in a | subtraction. <br> - Solves addition and | - by using multiplication facts. <br> - Divide by single digit with | - Tests of divisibility for 3, 9 \& 11 . |
| comparison. (Real objects and repeated events like | line. | subtraction | and without remainder. |  |
| repeated events like clapping to be used for | Addition and Subtraction <br> - Adds and subtracts two | problems in different situations | - Applies the four operations to life situations. |  |


| counting) <br> - Reads and writes numerals from 1 to 9 . <br> - Adds and subtracts using real objects and pictures. <br> - (Sum not to exceed 9 and difference to not to go below 1.) <br> - Adds and subtracts the numbers using symbols '+' and ' - '. <br> - Approaches zero through the subtraction pattern (such as $3-1=2,3-2=1,3-3=$ $0)$. <br> Numbers from (10-20) <br> - Introduction of 10 <br> - Forms Number sequence from 10 to 20. <br> - Counts objects using these numbers. <br> - Groups objects into a group of 10 s and single objects. <br> - Develops the vocabulary of group of 'tens' and 'ones'. <br> - Shows the group of tens and ones by drawing. <br> - Counts the number of tens and ones in a given number. <br> - Writes number names ten to nineteen. <br> - Writes numerals for ten and twenty. <br> - Compares numbers upto 20. | digit numbers by drawing representations of tens and ones without and with regrouping. <br> - Adds zero to a number and subtracts zero from a number. <br> - Observes the commutative property of addition through patterns. <br> - Solves addition, subtraction problems presented through pictures and verbal description. <br> - Describes orally the situations that correspond to the given addition and subtraction facts. <br> - Estimates the result of addition and subtraction and compares the result with another given number. <br> (Based on place values.) <br> Preparation for <br> Multiplication and Division <br> - Discussion of situations involving repeated addition and situations involving equal sharing. <br> - Activities of making equal groups. | presented through pictures and stories. <br> - Frames problems for addition and subtraction facts. <br> - Estimates the sum of, and difference between, two given numbers. Multiplication <br> - Explains the meaning of multiplication (as repeated addition). <br> - Identifies the sign of multiplication. <br> - Constructs the multiplication tables <br> of $2,3,4,5$ and 10 <br> - Uses multiplication facts in situations. <br> - Construct tables for $6,7,8,9$ <br> - Multiplies two digit numbers by single digit number using standard algorithm and Lattice multiplication algorithm. <br> Division <br> - Explains the meaning of division from context of equal grouping and sharing. <br> - Relates division with multiplication. <br> - Completes division facts: <br> (Double digit by single digit) <br> - by repeated subtraction <br> - by grouping | - Frames word problems. <br> - Estimates sums, differences and products of given numbers. <br> - Even, odd <br> - Test of divisible 2, 5 \& 10 <br> - Tests of divisibility for 2,5 , \& 10 . |
| :---: | :---: | :---: | :---: |


| Addition and Subtraction (UPTO 20) <br> - Adds and subtracts numbers upto 20. <br> Numbers from 21-99 <br> - Writes numerals for Twentyone to Ninety nine. <br> Groups objects into tens and ones. <br> - Draws representation for groups of ten and ones. <br> - Groups a number orally into tens and ones. |  | - by using multiplication tables. |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Mental Arithmetic <br> - Number complement of 5 <br> - Addition facts up to 9 <br> - Adds two single digit numbers mentally. | Mental Arithmetic <br> - Number complement of 10 <br> - Adds and subtracts single digit numbers mentally. <br> - Adds and subtracts multiples of ten mentally. | Mental Arithmetic <br> - Adds and subtracts single digit numbers and two digit numbers mentally. <br> - Doubles two digit numbers mentally (result not exceeding two digits). | Mental Arithmetic <br> - Adds and subtracts multiples of 10 and 100, mentally. <br> - Completes multiplication facts by adding partial products, mentally (e.g. $7 \times 6=5 \times 6+2 \times 6$ ). <br> Fractional Numbers <br> - Identifies half, one fourth and three- fourths of a whole. <br> - Identifies the symbols, $1 / 2,1 / 4,3 / 4$. <br> - Explains the meaning of $1 / 2$, $1 / 4$ and $3 / 4$. <br> - Identifies other Fractions <br> - Appreciates equivalence of $2 / 4$ and $1 / 2$; and of $2 / 2,3 / 3$, 4/4 and 1 . | Mental Arithmetic <br> - Estimates sums, differences, products and quotients and verifies using approximation. <br> Fractional Numbers <br> - Finds the fractional part of a collection. <br> - Identifies equivalent fractions. <br> Estimates the degree of closeness of a fraction to known fractions ( $1 / 2,1 / 4,3 / 4$ etc.) <br> - Compares unlike fractions. <br> - Addition and subtraction of unlike fractions <br> - Understanding of mixed |


|  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
|  |  |  | Addition and subtraction of <br> like fractions. | and Improper fractions. <br> • Expresses a given fraction <br> in decimal notation and vice <br> versa. |


| length, and verifies using nonuniform units (e.g. hand span etc.) |  | metre. |  | in solving problems involving length, weight and volume. <br> 5. Determines area and perimeter of simple geometrical figures. <br> 6. Appreciates volume of a solid body: intuitively and also by informal measurement. <br> - Uses addition and subtraction in finding time intervals in simple cases. |
| :---: | :---: | :---: | :---: | :---: |
| Weight <br> - Compares between heavy and light objects. <br> Time <br> - Distinguishes between events occurring in time using terms -earlier and later. <br> - Gets the qualitative feel of long \& short duration, of school days $\mathrm{v} / \mathrm{s}$ holidays. <br> - Narrates the sequence of events in a day. | Weight <br> - Compares two or more objects by their weight using. non-standard units <br> - Appreciates the need for a simple balance. <br> - Compares weights of given objects using simple balance. <br> Time <br> - Gets familiar with the days of the week and months of the year. <br> - Sequences the events occurring over longer periods in terms of dates/days. | Weight <br> - Weighs objects using 1 kg . <br> - Appreciates the conservation of weight. <br> Volume <br> - Measures and compares the capacity of different containers in terms of a litre. <br> - Appreciates the conservation of volume. <br> Time <br> - Reads a calendar to find a particular day and date. <br> - Reads the time correct to the hour. <br> - Sequences the events chronologically. | Weight <br> - Weighs objects using a balance and standard units. <br> - Determines sums and differences of weights. <br> - Estimates the weight of an object and verifies using a balance. <br> Volume <br> - Measures volumes of given liquid using containers marked with standard units. <br> - Determines sums and differences of volumes. <br> - Estimates the volume of a liquid contained in a vessel and verifies by measuring. Time <br> - Computes the number of weeks in a year. |  |


|  |  |  | - Correlates the number of days in a year with the number of days in each month. <br> - Reads clock time to the nearest hours and minutes. <br> - Expresses time, using the terms, 'a.m.' and 'p.m.' <br> - Estimates the duration of familiar events. <br> - Finds approximate time elapsed by (to the nearest hour) forward counting. <br> - Introduction to the Idea of rounding <br> - Computes the number of days between two dates. |  |
| :---: | :---: | :---: | :---: | :---: |
| Data Handling (6 hrs.) <br> - Collects, represents and interprets simple data such as measuring the arm length or circumference of the head using a paper strip. | Data Handling (6 hrs.) <br> - Collects data through measurement. <br> - Represents the data followed by discussion (e.g. heights of children). <br> - Collects and presents the data on birthdays. <br> - Draws inferences from the data at the appropriate level. | Data Handling (6 hrs.) <br> - Records data using tally marks. <br> - Collects data and represents in terms of pictograph choosing appropriate scale an unit for display through pictographs. <br> - Draws conclusions from the data by discussing with the teacher. | Data Handling (6 hrs.) <br> - Collects data and represents in the form of bar graphs; - Draws Inferences by discussing with the teacher. | Data Handling ( 6 hrs.) <br> - Collects two-dimensional quantitative data. represents the data in the form of a table. <br> - Draws a bar graph or a pictograph to present a data. |
| Patterns ( $\mathbf{1 0}$ hrs. ) <br> - Describes sequences of simple patterns found in shapes in the surroundings | Patterns ( 10 hrs.) <br> - Observes and extends patterns in sequence of shapes and numbers. | Patterns ( 6 hrs.) <br> - Identifies simple symmetrical shapes and patterns. | Patterns ( 6 hrs .) <br> - Identifies patterns in multiplication and division: multiples of 9, | Patterns ( 6 hrs .) <br> - Identifies patterns in square numbers, triangular |


| and in numbers, e.g. stamping activity using fingers and thumb. <br> - Completes a given sequence of simple patterns found in shapes in the surroundings and in numbers. | - Searches for patterns in different ways of splitting a number. <br> - Creates block patterns by stamping thumbprints, leaf prints, vegetable prints, etc. <br> - Creates patterns of regular shapes by stamping. | - Makes patterns and designs from straight lines and other geometrical shapes. <br> - Identifies patterns in the numerals for odd and even numbers and in adding odd and even numbers. <br> - Partitions a number in different ways. <br> - Identifies patterns in his surroundings <br> - Identifies patterns in multiplication tables of 2,5 , and 10. | - Casts out nines from a given number to check if it is a multiple of nine. <br> - Multiplies and divides by 10s, 100s. <br> - Identifies geometrical patterns based on symmetry. | numbers. <br> - Relates sequences of odd numbers between consecutive square numbers. <br> - Makes border strip and tiling patterns. |
| :---: | :---: | :---: | :---: | :---: |

