Syllabus

Area & Chapters	Syllabus Description
Number System (60 hrs) **1. Knowing our Numbers:** **2. Whole Numbers** **3. Playing with Numbers** **6. Integers** **7. Fractions and Decimals**	**(i) Knowing our Numbers:** • Consolidating the sense ofNumber up to 99,999; Estimation of numbers,Comparison of numbers; Place value (recapitulation and extension); connectives: use of symbols =, <, > ; Use of brackets. • Word problems on number operations involving large numbers up to a maximum of 6 digits in the answer (This would include conversions of units of length & mass from the larger to the smaller units). • Estimation of outcome of number operations. • Introduction to large numbers (a) up to lakhs and ten lakhs(b) up to crores and ten crores·International system of numbers (Millions..) **(ii) Whole numbers:** • Natural numbers, whole numbers. • Properties of numbers (closure, commutative, associative, distributive, additive identity, multiplicative identity). • Number line. Seeing patterns, identifying and formulating rules to be done by children. • Utility of properties in fundamental operations. **(iii) Playing with Numbers:** • Consolidating divisibility rules of 2,3,5,6,9,10. • Discovering divisibility rules of 4,8,11 through observing patterns. • Multiples and factors, Even/odd numbers, prime/composite numbers, Co-prime numbers. • Prime factorization, every number can be written as products of prime factors. • HCF and LCM, primefactorization and division method. • Property: LCM × HCF = product of twonumbers. • LCM & HCF of co-primes. • Importance of Zero, and its properties **(iv) Negative Numbers and Integers:** • How negative numbers arise, models of negative numbers, connection to daily life, ordering of negative numbers, representation of negative numbers on number line. • Children to see patterns, identify and formulate rules. • Understanding the definition of integers, identification of integers on the number line. • Operation of addition and subtraction of integers, showing the operations on the number line (Understanding that the addition of negative integer reduces the value of the number). • Comparison of integers, ordering of integers.

	(v) Fractions and Decimals: • Revision of what a fraction is,Fraction as a part of whole. • Representation of fractions (pictorially and on number line) • Fraction as a division, proper, improper & mixed fractions • Equivalent fractions, like , unlike fractions, comparison of fractions. • Addition and subtraction of fractions. • Word problems (Avoid large and complicated calculations). • Estimates the degree of closeness of a fractions (1/2, ¼, ¾ etc.,). • Review of the idea of a decimal fraction • Place value in the context of decimal fraction. • Inter conversion of fractions and decimal fractions (avoid recurring decimals at this stage). • Word problems involving addition and subtraction of decimals (word problems should involve two operations) Contexts: money, mass, length temperature.
Algebra (15 hrs) **9. Intrtoduction Algebra**	**Intrtoduction Algebra:** • Introduction to variable through patterns and through appropriate word problems and generalizations (example 5 × 1 = 5 etc.). • Generate such patterns with more examples. • Introduction to unknowns through examples with simplecontexts (single operations). • Number forms of even and odd (2n, 2n+1).
Arthematic (15hrs) **11. Ratio and Proportion**	**Ratio and Proportion** : • Concept of Ratio • Proportion as equality of tworatios • Unitary method (with only direct variation implied) • Word problems • Understanding ratio and proportion in Arithmetic
Geometry (65 hrs) **4. Basic geometrical ideas**	**Basic geometrical ideas (2-D):** • Introduction to geometry. Itslinkage with and reflection ineveryday experience. • Line, line segment, ray. • Open and closed figures. • Interior and exterior of closedfigures. • Curvilinear and linear boundaries • Angle — Vertex, arm, interiorand exterior, • Triangle — vertices, sides, angles, interior and exterior, altitude andmedian. • Quadrilateral — Sides, vertices,angles, diagonals, adjacent sidesand opposite sides (only convexquadrilateral are to be discussed), interior and exterior of aquadrilateral. • Circle — Centre, radius,diameter, interior and exterior, arc, chord ,sector, segment, semicircle, circumference,

5. Measures of Lines and Angles **12. Symmetry** **13. Practical Geometry** **14. Understand-ing 3D, 2D Shapes**	**Measures of Lines and Angles:** • Measure of Line segment. • Measure of angles. • Types of angles- acute, obtuse, right, straight, reflex, completeand zero angle. • Pair of lines Intersecting and perpendicular lines Parallel lines.
	Symmetry: • Observation and identification of 2-D symmetrical objects for reflection symmetry. • Operation of reflection (taking mirror images) of simple 2-D objects. • Recognising reflection symmetry (identifying axes).
	Practical Geometry (Constructions): • Drawing of a line segment (using Straight edge Scale, protractor, compasses). • Construction of circle. • Perpendicular bisector. • Construction of angles (usingprotractor) • Angle 60°, 120° (UsingCompasses) • Angle bisector - making anglesof 30°, 45°, 90° etc. (usingcompasses) • Angle equal to a given angle(using compass) • Drawing a line perpendicular toa given line from a point a) onthe line b) outside the line.
	Understand-ing 3D, 2D Shapes: • Identification of 3-D shapes: Cubes, Cuboids, cylinder, sphere, cone, prism (triangular), pyramid (triangular and square) Identification and locating in the surroundings • Elements of 3-D figures. (Faces,Edges and vertices) • Nets for cube, cuboids, cylinders,cones and tetrahedrons.
Mensuration (15 hrs) **10. Perimeter and Area**	**Perimeter and Area:** • Introduction and general understanding of perimeter using many shapes. • Shapes of different kinds with the same perimeter. • Concept of area, Area of a rectangle and a square Counter examples to different misconnects related to perimeter and area. • Perimeter of a rectangle – and its special case – a square. • Deducing the formula of the perimeter for a rectangle and then a square through pattern and generalisation.
8. Data Handling **(10 hrs)**	**Data Handling:** • What is data. • Collection and organisation ofdata - examples of organisingit in tally marks and a table. • Pictograph- Need for scaling inpictographs interpretation &construction. • Making bar graphs for givendata interpreting bar graphs.

Academic Standards

CONTENT	ACADEMIC STANDARDS	
Number system **1. Knowing our numbers**	**Problem Solving**	• Word problems on number operations involving large numbers up to a maximum of 5 digits in the answers. • Conversions of units of length and mass.
	Reasoning, Proof	• Estimation of outcome of number operations. • Comparison of numbers up to large numbers with concept of place value. • Formation of different numbers by using given numbers and select biggest, smallest among them.
	Communication:	• Writes any five digit numbers in words and vice versa. • Comparison of five digit numbers using the symbols <,>,=.
	Connections:	• Understands the Usage of large numbers in daily life (village population, income from land, etc.)
	Representation:	• Expresses the numbers into expanded and compact form By using unit, ten, hundred, thousand blocks represents numbers through them.
2. Whole numbers	**Problem Solving**	• _____
	Reasoning, Proof	• Verification of properties of whole numbers such as closure, associative, inverse, identity, distributive, commutative (+.-.x)
	Communication:	• Understands the need of whole number instead of natural numbers.
	Connections:	• Finds the usage of whole numbers from their daily life. • Understands the relation between N, and W.
	Representation:	• Represents the whole numbers on the number line.
3. Playing with Numbers	**Problem Solving**	• Simplification of numerical statements involving two or more brackets • Tests the divisibility rules • Understands the use of LCM and HCF in different situations and find them in division, prime factorization method.

	Reasoning, Proof	• Finds the logic behind the divisibility rules. • Understands the relationship between LCM and HCF of two numbers by verification, why this relation hold only in two numbers, take more than two numbers and see the pattern, conclude
	Communication:	• Uses brackets involving fundamental operations.
	Connections:	• Establishes the relation among factors. • Under stands the use of LCM and HCF from their real life situations. • Finds the patterns in division, multiplication tables.
	Representation:	•
6. Integers	**Problem Solving**	• Solves the problems on addition, subtraction involving integers
	Reasoning, Proof	• Compares integers, and ordering of integers. • Difference of +,_ between N, and Z
	Communication:	• Understands the necessity of set of integers.
	Connections:	• Finds the connection among N,W and Z
	Representation:	• Represents the integers on the number line. • Shows the addition, subtraction on the number line.
7. Fractions and Decimals	**Problem Solving**	• Adds, subtracts, multiplies like and unlike fractions (avoid complicated, large tasks) • Inter conversion of fractions and decimal fractions. • Word problems involving + ,- of decimals (two operations together on money, mass, length, temperature)
	Reasoning, Proof	• _____
	Communication:	• _____

	Connections:	• Connections between fraction, decimal fractions, decimal numbers
	Representation:	• _____
Algebra **9. Intrtoduction Algebra**	**Problem Solving**	• Finds the value of the expression when substituting a value in place of variable (Simple expressions can be taken and single operation)
	Reasoning, Proof	• Generalizes the given patterns and express as algebra expression.
	Communication:	• Converts the real life simple contexts into Algebraic expression (vice versa)
	Connections:	• Finds the usage of algebraic expression when occurring the unknown values. • Inter links the number system with algebraic system by usage of simple contexts.
	Representation:	• Represents the even, odd number in general form as 2n, 2n+1.
Arithemetic **11. Ratio and Proportion**	**Problem Solving**	• Calculates compound, inverse ratio of two ratios. • Solves word problem involving unitary method
	Reasoning, Proof	• Compares the given ratios. • Verifies the rule of proportion involving the ratios. • Gives the reasons why the same units can be taken in expressing of ratios.
	Communication:	• Write ratios in symbiotic and equivalent fractional form.
	Connections:	• Observes the relation between line and work, time and distance writing reading to proportions. • Understands the usage of ratios and proportion in daily life problems.
	Representation:	• _____

Geometry **4. Basic Geometrical Ideas**	**Problem Solving**	• _____
	Reasoning, Proof	• Differentiates the basic geometric shapes (triangle, circle, Quadrilaterals) • Differentiates and compares the Quadrilaterals and triangle.
	Communication:	• Gives the example of basic geometry shapes (from surface of the surrounding objects).
	Connections:	• Visualizes the basic geometric shapes from surroundings. • Understands the inter relation between various components of a circle (Circle, Semi Circle, Sector, Diameter, Radius, chord etc).
	Representation:	• Gives pictorial representation of basic geometric shapes.
5. Measures of Lines and Angles	**Problem Solving**	• Measures the given line segment
	Reasoning, Proof	• Compares the lengths of line segments by estimation and verification. • Classifies the given angles. • Differentiates the pair of lines as intersecting, perpendicular lines. • Estimates the type of given angle. • Compares the given angle. • Rounds off an angle to nearest measure by estimation.
	Communication:	• _____
	Connections:	• Finds the usage of elementary shapes and their measurements in surroundings.
	Representation:	• Draws a line segment with given measurement. • Draws the given angle using apparatus.

12. Symmetry	**Problem Solving**	• Finds the symmetric axis of given 2D shapes.
	Reasoning, Proof	• Distinguishes symmetrical and non symmetrical shapes. • Explains the reflection symmetry in the given 2D figure
	Communication:	• Explains reflection symmetry with its axis in 2D objects
	Connections:	• Observes and identify the reflective symmetry from surroundings. • Appreciates the reflection symmetric nature in surroundings.
	Representation:	• Draws the symmetric axis in the given 2D figures
13. Practical Geometry	**Problem Solving**	• _____
	Reasoning, Proof	• Estimates the given pair of lines whether they are perpendicular or not. • Estimates the given line whether it is angle bisector or not
	Communication:	• Communicate how constructions made in line sigment, Circle, Perpendicualr bisector, angle, angle bisector.
	Connections:	• _____
	Representation:	• Draws the line segment, circle, perpendicular bisector, angle, angle bisector.
14. Understanding 3D, 2D Shapes	**Problem Solving**	• _____
	Reasoning, Proof	• Differentiates the 3D shapes as per faces edges, vertices (Cube, Cuboids, Cylinder, Sphere, Cone, Prism, Pyramid)
	Communication:	• _____

	Connections:	• Identifies the 3D shape by their names from surroundings. • Understands the relation between cube, cuboid, cylinder and their nets.
	Representation:	• Represents 3D shape as 2D on paper.
Mensuration **10. Perimeter and Area**	**Problem Solving**	• Solves the problems involving perimeter and area of rectangle and square. • Solves word problems
	Reasoning, Proof	• Differentiates perimeter and area of a figure. • Finds the perimeter of a given figure, involving more than 2 shapes. • Gives the measurements of rectangle/ square which have same area but different perimeters. • Identifies the same perimeter different shapes from given shapes. • Finds errors in solving of perimeter, area and rectifying them.
	Communication:	• Perimeter / area of rectangle / square is expressed in formulae and in words also
	Connections:	• Establishes relation between units to area and perimeter.
	Representation:	• Shows the area of the polygon by shading the region.
8. Data Handling	**Problem Solving**	• Organization of raw data into classified data.
	Reasoning, Proof	• Interpretation of tabular data into verbal form.
	Communication:	• Merits, demerits of bar graphs and pictographs, comparing with raw data.
	Connections:	• Understands the usage of bar graphs, pictographs in daily life situations (Year wise population, Annual Budget, Production of crops etc).
	Representation:	• Represents data in tally marks. • Represents data in tabular forms. • Represents data into bar graphs and pictographs.

Distribution of Population and Sex Ratio: Census 2011

State / UT Code	India / State / Union Terrory	Total Population			Sex ratio (females per 1000 males)
		Persons	Males	Female	
1	2	3	4	5	6
	INDIA	1,210,193,422	623,724,248	586,469,174	940
1	Jammu & Kashmir	12,548,926	6,665,561	5,883,365	883
2	Himachal Pradesh	6,856,509	3,473,892	3,382,617	974
3	Punjab	27,704,236	14,634,819	13,069,417	893
4	Chandigarh	1,054,686	580,282	474,404	818
5	Uttarakhand	10,116,752	5,154,178	4,962,574	963
6	Haryana	25,353,081	13,505,130	11,847,951	877
7	NCT of Delhi	16,753,235	8,976,410	7,776,825	866
8	Rajasthan	68,621,012	35,620,086	33,000,926	926
9	Uttar Pradesh	199,581,477	104,596,415	94,985,062	908
10	Bihar	103,804,637	54,185,347	49,619,290	916
11	Sikkim	607,688	321,661	286,027	889
12	Arunachal Pradesh	1,382,611	720,232	662,379	920
13	Nagaland	1,980,602	1,025,707	954,895	931
14	Manipur	2,721,756	1,369,764	1,351,992	987
15	Mizoram	1,091,014	552,339	538,675	975
16	Tripura	3,671,032	1,871,867	1,799,165	961
17	Meghalaya	2,964,007	1,492,668	1,471,339	986
18	Assam	31,169,272	15,954,927	15,214,345	954
19	West Bengal	91,347,736	46,927,389	44,420,347	947
20	Jharkhand	32,966,238	16,931,688	16,034,550	947
21	Orissa	41,947,358	21,201,678	20,745,680	978
22	Chhattisgarh	25,540,196	12,827,915	12,712,281	991
23	Madhya Pradesh	72,597,565	37,612,920	34,984,645	930
24	Gujarat	60,383,628	31,482,282	28,901,346	918
25	Daman &Diu	242,911	150,100	92,811	618
26	Dadra & Nagar Haveli	342,853	193,178	149,675	775
27	Maharashtra	112,372,972	58,361,397	54,011,575	925
28	Andhra Pradesh	84,665,533	42,509,881	42,155,652	992
29	Karnataka	61,130,704	31,057,742	30,072,962	968
30	Goa	1,457,723	740,711	717,012	968
31	lakshadweep	64,429	33,106	31,323	946
32	Kerala	33,387,677	16,021,290	17,366,387	1,084
33	Tamil Nadu	72,138,958	36,158,871	35,980,087	995
34	Puducherry	1,244,464	610,485	633,979	1,038
35	Andaman & Nicobar Islands	3,79,944	202,330	177,614	878