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CLASS 5
YEARLY LEARNING OUTCOMES FOR MATHS
YEAR 2021-22

By the end of the year, students should be able to-

Number System:

M1. Write and interpret numerical expressions.

M1.1 Count numbers extended upto 10 lakh or one million (0 to 1000000)
M1.2 Identify 7 digit numerals (100000 to 1000000), name in lakh, ten lakhs
M1.3 Recognize and match numerals with number names and vice versa (100000 to 1000000)
M1.4 Identify and compare the numbers from 100000 to 1000000 using <, > and =
M1.5 Understand the terms successor as the number after and predecessor as the number before.
M1.6 Arrange 7-digit numbers (100000 to 1000000) in ascending and descending order (given in periods of 10)
M1.7 Compare the Indian and International systems of numeration
M1.8 Round off a number to the nearest 10, 100, 1000

M2. Understand the place value system.

M2.1 State the place value of a digit (from 10-1000000) by expanding and/or by converting expanded form to 7 digit
M2.2 Distinguish between place value and face value of the digit

M3. Analyze patterns and relationships.

M3.1 Recognize a wide variety of patterns (e.g., basic linear patterns such as [2, 4, 6, 8 . . .] ; simple repeating and growing patterns and the rules that explain them

- Understand the concept of a growing pattern
- Understand the concept of a simple repeating pattern
- Recognize linear patterns
- Recognize increasing patterns
- Recognize decreasing patterns
- Recognize the rules that explain simple patterns

M3.2 Understand that the same pattern can be represented in different ways (e.g., geometrically or numerically; the pattern of numbers [7, 14, 21, 28 . . .] is equivalent to the mathematical relationship 7 × n)

- Understand that patterns can be represented numerically
- Understand that patterns can be represented geometrically
- Represent simple patterns geometrically
- Represent simple patterns numerically

Computation:

M4. Perform operations with multi-digit whole numbers.

M4.1 Solve problems (numerical and word) involving addition, subtraction, multiplication and division
M4.2 Solve problems using unitary method
M4.3 Understand and apply the BODMAS rule for the order of four operations

Factors And Multiples

M4.4 Demonstrate the understanding of odd and even numbers using number patterns, prime numbers, composite numbers, multiples and factors (Revision of Class 4)
M4.5 Test divisibility of numbers by 2, 3, 4, 5
M4.6 Calculate H.C.F and L.C.M of 2 or 3 numbers using factors and multiples (Revision of Class 4)
M4.7 Factorise a composite number by building a factor tree and prime factorization method
M4.8 Express a composite number as product of prime numbers/factors using index notation and find H.C.F. and L.C.M. using factors
M4.9 Solve daily life problems related to H.C.F. and L.C.M. (Not to be tested)

Fractions:

M5. Use equivalent fractions as a strategy to add and subtract fractions.

M5.1 Identify a unit fraction, proper fraction, improper fraction and mixed numbers (revision of Class 4)
M5.2 Demonstrate the understanding of equivalent fractions of a given fraction (revision of Class 4)
M5.3 Reduce a fraction to its lowest terms (revision of Class 4)
M5.4 Compare and order two or more fractions (proper and improper)
M5.5 Add and subtract fractions with like denominators and unlike denominators (revision of Class 4)
M5.6 Add and subtract more than two fractions and mixed numbers with like and unlike denominations (revision of Class 4)

M6. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

M6.1 Multiply and divide a fraction by a whole number
M6.2 Multiply two or more fractions or mixed numbers
M6.3 Understand the reciprocal of a fraction
M6.4 Divide a whole number by a fraction
M6.5 Divide one fraction or mixed number by a counting number or another fraction or mixed number
M6.6 Solve problems involving comparing, addition, subtraction, multiplication and division of fractions or mixed numbers

Decimals and Percentage:

M 7. Perform operations with decimals to hundredths.

Decimals

M7.1 Demonstrate the understanding of and use of decimals upto 3 decimal places, including place value and expanded form
M7.2 Convert fractions into decimals and vice versa
M7.3 Express common fractions as decimals
M7.4 Compare decimals upto 3 decimal places and arrange decimals in ascending and descending order
M7.5 Add and subtract decimals up to 3 decimal places with and without regrouping.
M7.6 Multiply a decimal by 10 ,100 and 1000, by a counting number or by a decimal number not exceeding 3 decimal places
M7.7 Divide a decimal by 10, 100 and 1000, quotient not exceeding 3 decimal points
M7.8 Solve problems involving multiplication and division skills learnt for decimals

Percentage

M7.9 Demonstrate understanding of a percent as parts of a hundred and the representation of a percent as %
M7.10 Express a fraction (denominator a factor of 100) as a percent and then as a decimal (using squares divided into 100 parts)
M7.11 Convert a percent into a decimal and into a fraction in lowest terms
M7.12 Convert decimals as percents and certain fractions as percents
M7.13 Convert a counting number into a percentage
M7.14 Solve daily life problems involving money, time, and metric units of length, weight and capacity with the use of percentage

Measurement:

M 8. Convert like measurement units within a given measurement system.

Money

M8.1 Solve simple money problems including profit, loss and percentage

Length

M8.2 Understand the meaning of the prefixes like milli, centi, deci, deca, hecto and kilo related to length (Revision of Class 4)
M8.3 Use the above mentioned units of length in conversion, addition, subtraction, multiplication and division problems

Weight (Mass)

M8.4 Understand and use the metric units quintal, kilo, hecto, deca, gram, deci, centi and milli to solve simple sums related to weight (Revision of Class 4)

M8.5 Use the above mentioned metric units in conversion, addition, subtraction, multiplication and division (exact) and daily life problems

Capacity

M8.6 Solve problems including daily life problems involving the use of standard units of capacity (ml, cl, dl, l, dal, hl, kl) (Revision of Class 4) in conversion, addition, subtraction, multiplication and division

Temperature (Not to be tested)

M8.7 Understand and use the terms 'Temperature', 'Thermometer', 'Celsius' and 'Fahrenheit'

M8.8 Read temperature on a thermometer (Celsius and Fahrenheit)

Geometry and Mensuration:

Geometry and Construction

M 9. Classify two-dimensional figures into categories based on their properties.

M9.1 Understand, identify and draw a line, a ray, a point, a line segment

M9.2 Identify the different types of lines and their properties (parallel, intersecting, perpendicular)

M9.3 Identify, estimate, measure and construct different kinds of angles (acute, obtuse, right, straight, reflex, whole, adjacent, complementary, supplementary, vertically opposite angles)

M9.4 Use geometric instruments for measuring and drawing angles, line segments and lines

M9.5 Understand and use angle measure in degrees

M9.6 Classify the different kinds of triangles, understand their properties (scalene, isosceles, equilateral, acute, obtuse, and right triangles) and construct them

M9.7 Identify the different types of polygons and their properties (triangle, quadrilateral, pentagon, hexagon, heptagon, octagon) (Not to be tested)

M9.8 Understand the term 'Quadrilateral' and identify the different types of quadrilaterals and their properties (parallelogram, rectangle, rhombus, square) (Not to be tested)

M9.9 Understand the terms related to circles (centre, radius, chord, diameter, circumference/perimeter, arc) and construct circles with different radii

M9.10 Calculate the diameter and radius of a circle

M 10. Understand relationships between measures (e.g., between length, perimeter, and area).

M10.1 Find area of rectangular or square region using any strategy

M10.2 Use cm- squared paper to find the area of the triangle and irregular figures/shapes

M10.3 Calculate the area of shapes formed from rectangles and squares in cm^2 , m^2 and km^2

M10.4 Estimate and measure perimeter of a rectangle, square or a triangle

M 11. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

M11.1 Form hollow cubes and cuboids from shapes formed of squares
M11.2 Visualize 3d shapes from given 2d drawings and nets eg.an open or closed cube
M11.3 Make shapes of cube, cuboid, cones using the net specially designed for it

Symmetry

M11.4 Explore symmetry in the given 3D shapes
M11.5 Create patterns with two lines of symmetry: eg. On pegboard or on given square paper

Data Handling, Average and Statistics:

M12. Represent and interpret data.

M12.1 Read information on given bar graph (single and double), tally chart and pictograph

M13. Graph points on the coordinate plane to solve real-world and mathematical problems.

M13.1 Solve sums based on bar graph
M13.2 Create a bar graph, tally chart or a pictograph from the given data
M13.3 Arrange data in columns and rows using appropriate scales on the x and y axis
M13.4 Interpret pie charts and line graphs generally found in newspapers and magazines
M13.5 Calculate averages with simple numbers

Mathematical Reasoning:

M 14. Make decisions about how to approach problems

M 14.1 Analyse problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information and observing patterns
M14.2 Determine when and how to break a problem into simpler parts.

M 15. Use strategies, skills and concepts in finding solution

M15.1 Apply strategies and results from simpler problems to more complex problems.
M15.2 Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to ex[lain mathematical reasoning.
M15.3 Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language, support solutions with evidence in both verbal and symbolic work.

M 16. Move beyond a particular problem by generalizing to other solutions

M16.1 Develop generalisations of the results obtained and apply them in other circumstances.