

Class 5

Section I
Pedagogical processes suggested by NCERT
The learner may be provided opportunities in pairs /groups / individually and encouraged to —
Discuss on contexts /situations in which a need arises to go beyond the number 1000 so that extension of number system occurs naturally. For example, number of grams in 10 kg, number of metres in 20 km, etc.
Represents numbers beyond 1000 (up to 100000) using place value system, like extend learning of numbers beyond 9 thousand, how to write number one more than 9999
Operate (addition and subtractions) large numbers using standard algorithm. This may be identified as extension of algorithm for one more place
Use a variety of ways to divide numbers like equal distribution and inverse process of multiplication
Estimate the results of number operation through approximations and then verifies it
Develop the idea of multiples of a number through its multiplication facts, skip counting on a number line and number grid
Develop the concept of factors through division of numbers and multiples
Discuss and use contexts / situations from daily life in activities to develop understanding about fractional part of the group like, how many bananas are there in half a dozen bananas?
Compares fractions through various ways like paper folding, shading of diagram etc.
Develop the idea of equivalence of fractions through various activities.
Understand the idea of decimal fractions ($1/10$ th and $1/100$ th)
Develop earlier understanding of angles and to describe it.
Observe angles in their surroundings and compare their measures. For example, whether the angle is smaller, bigger or equal to the corner of a book which is a right angle; further, classify the angles
Introduce protractor as a tool for measuring angles and use it to measure and draw angles
Explore symmetry by using paper folding / Paper cutting
Explore shapes so that they can find out that some shapes look the same only after one complete rotation / part of a rotation
Plan their shopping— to make estimates of money (in different denominations) and the balance money one would get
Conducts role play of shopkeepers / buyers in which students create bills
Measure length of different objects using a tape / metre scale.
Appreciates the need of converting bigger units to smaller units
Discuss experiences on units of capacity
Printed on water bottle, soft drink pack, etc. fill a given space by using different solid shapes, cubes, cuboids, prisms, spheres, etc. and encourage students to decide which solid shape is more appropriate
Measure volume by counting the number of unit cubes that can fill a given space
Explore patterns in numbers while doing various operations and to generalize them as

patterns in square numbers

Collect information and display it in a pictorial form. For example, heights of students from their class and represent it pictorially

Collect and discuss various diagrams / bar charts from the newspapers / magazines available in the class.

Section II

Learning Outcomes of NCERT

Measuring the Los

The learner —

Works with large numbers

- a) Reads and writes numbers bigger than 1000 being used in her /his surroundings
- b) Performs four basic arithmetic operations on numbers beyond 1000 by understanding of place value of numbers
- c) Divides a given number by another number using standard algorithms

Estimates sum, difference, product and quotient of numbers and verifies the same using different strategies like using standard algorithms or breaking a number and then using operation. For example, to divide 9450 by 25, divide 9000 by 25, 400 by 25, and finally 50 by 25 and gets the answer by adding all these quotients.

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- divides a given number by another number using standard algorithms -- estimates sum, difference, product and quotient of numbers and verifies the same using different strategies like using standard algorithms or breaking a number and then using operation.

Acquires understanding about fractions

- finds the number corresponding to part of a collection
- identifies and forms equivalent fractions of a given fraction
- expresses a given fraction $1/2$, $1/4$, $1/5$ in decimal notation and vice-versa. For example, in using units of length and money- half of Rs. 10 is Rs.5
- converts fractions into decimals and vice versa

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- expresses a given fraction $1/2$, $1/4$, $1/5$ in decimal notation and vice-versa.
- converts fractions into decimals and vice-versa

Explores idea of angles and shapes

- a) Classifies angles into right angle, acute angle, obtuse angle and represents the same by drawing and tracing
- b) Identifies 2d shapes from the immediate environment that have rotation and

Explores idea of angles and shapes:

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<p>reflection symmetry like alphabet and shapes</p> <p>Makes cube, cylinder and cone using nets designed for this purpose</p>	<p>rotation and reflection symmetry like alphabet and shapes</p> <ul style="list-style-type: none"> • makes cube, cylinder and cone using nets designed for this purpose
<p>Relates different commonly used larger and smaller units of length, weight and volume and converts larger units to smaller units and vice versa</p>	<p>Relates different commonly used larger and smaller units of length, weight and volume and converts larger units to smaller units and vice versa</p>
<p>Estimates the volume of a solid body in known units like volume of a bucket is about 20 times that of a mug</p>	<p>Estimates the volume of a solid body in known units</p>
<p>Applies the four fundamental arithmetic operations in solving problems involving money, length, mass, capacity and time intervals</p>	<p>Applies the four fundamental arithmetic operations in order to solve problems involving money, length, mass, capacity and time intervals</p>
<p>Identifies the pattern in triangular number and square number</p>	<p>Identifies the pattern in triangular number and square number</p>
<p>Collects data related to various daily life situations, represents it in tabular form and as bar graphs and interprets it.</p>	<p>Collects data related to various daily life situations, represents it in tabular form and as bar graphs in order to interpret it.</p>

MAPPING OF GRADE 5 MATHEMATICS TOPICS WITH NCERT LEARNING OUTCOMES

Important Note: It must be ensured by the teachers that learners are able to use mathematical learning in day to day life and unfamiliar contexts/ situations about which they are not exposed earlier. Learning Objectives should also focus on enhancing the ability of the learner to convert a real life problem into a mathematical problem and the ability to interpret and evaluate mathematical results in the real life contexts.

Chapter name	Learning Objective	NCERT LO
Chapter 1: The Fish Tale	Solves simple real life problems involving measurement of length.	Applies the four fundamental arithmetic operations in solving problems involving money, length, mass, capacity and time intervals
	Solves simple real life problems related to speed, distance and time.	
	Solves simple real life problems related to weight	
	Identifies the numbers bigger than 1 lakh	Works with large numbers a) Reads and writes numbers bigger than 1000 being used in her /his surroundings b) Performs four basic arithmetic operations on numbers beyond 1000 by understanding of place value of numbers c) Divides a given number by another number using standard algorithms Estimates sum, difference, product and quotient of numbers and verifies the same using different strategies like using standard algorithms or breaking a number and then using operation.
	Solves real life problems related to money	Applies the four fundamental arithmetic operations in solving problems involving money, length, mass, capacity and time intervals
Solves simple real life problems related to loans, interest and savings		
Chapter 2: Shapes and Angles	Explain the meaning of an angle.	Explores idea of angles and shapes a) Classifies angles into right angle, acute angle, obtuse angle and represents the same by drawing and tracing b) Identifies 2d shapes from the immediate environment that have rotation and reflection symmetry like alphabet and shapes Makes cube, cylinder and cone using nets designed for this purpose
	Explain the relationship between the angles and the shape of a polygon.	
	Identifies and classifies different types of angles (right angle, acute angle, obtuse angle)	
	Classifies different angles found in our surroundings into acute angle, obtuse angle, right angle and represents the same by drawing and tracing	
	Makes a degree clock to estimate and measure angles around us.	
	Estimates and measures angles using a protractor	
	Finds the perimeter of a given figure	

Chapter 3:How Many Squares?	Develops a sense of the concept of 'area' using the square grid	
	Finds the area of objects by tracing on square grids	
	Solves simple problems based on the area of geometrical shapes	
	Deduces that objects having equal areas can have different perimeter.	
	Solves real life problems related to area of shapes	
Chapter 4:Parts and Wholes	Represents $\frac{1}{3}$, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{3}{4}$ part of a collection by shading and representing symbolically	Acquires understanding about fractions – finds the number corresponding to part of a collection – identifies and forms equivalent fractions of a given fraction – expresses a given fraction $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ in decimal notation and vice-versa.
	Compares fractions ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{3}{4}$)	
	Finds fractional parts of the given quantities ($\frac{2}{5}$ th of 100 coins)	
	Calculates the whole by looking at the given fractional part	
	Recognizes equivalence in fractions	
Chapter 5:Does it Look the Same?	Solves real life problems based on fractions	Explores idea of angles and shapes a) Classifies angles into right angle, acute angle, obtuse angle and represents the same by drawing and tracing b) Identifies 2d shapes from the immediate environment that have rotation and reflection symmetry like alphabet and shapes Makes cube, cylinder and cone using nets designed for this purpose
	Checks symmetry and finds line of symmetry in various objects and shapes	
	Identifies rotational symmetry in 2D shapes	
	Identifies shapes, numbers, objects which look the same after (i) half a turn; (ii) One-fourth turn; (iii) One-third turn; (iv) One-sixth turn.	
	Predicts and draws the shapes how an object would look like after Half turn, One-fourth turn, One-third turn, One- sixth turn.	
Chapter 6:Be My Multiple, I'll be your Factor	Identifies and defines multiples of a number.	
	Solves simple problems based on the multiples of numbers	
	Finds out common multiple(s) of given numbers	
	Finds factors using factor tree and solve contextual problems related to it.	
	Finds out common factors(s) of given numbers and solve contextual problems related to it.	
Connect the concepts of LCM and HCF with real life situations		

Chapter 7:Can You See the Pattern?	Identifies and explores patterns in special numbers	Identifies the pattern in triangular number and square number
Chapter 8:Mapping Your Way	Uses the concept of scale	
	Reads and interprets the given map	
	Draws a given picture with different scales and estimates the area occupied	
	Recognizes directions in different contexts.	
Chapter 9:Boxes and Sketches	Makes nets for cubes and cuboids	Explores idea of angles and shapes a) Classifies angles into right angle, acute angle, obtuse angle and represents the same by drawing and tracing b) Identifies 2d shapes from the immediate environment that have rotation and reflection symmetry like alphabet and shapes Makes cube, cylinder and cone using nets designed for this purpose
Chapter 10:Tenths and Hundredths	Represents decimals into fractions and vice versa.	Acquires understanding about fractions – finds the number corresponding to part of a collection – identifies and forms equivalent fractions of a given fraction – expresses a given fraction $1/2$, $1/4$, $1/5$ in decimal notation and vice-versa.
Chapter 11:Area and its Boundary	Calculates area of rectangular figures through different methods	
	Calculates the area of square	
	Solves problems based on area and perimeter of a rectangle	
	Solves problems based on area and perimeter of a square	
	Solves real life problems based on area of simple shapes.	
	Finds the perimeter and area of irregular shapes on square grid	
Chapter 12:Smart Charts	Records data in tabular form	Collects data related to various daily life situations, represents it in tabular form and as bar graphs and interprets it.
	Records and interprets data using tally marks	
	Plot data in a bar graph and interpret various bar graphs	
	Multiplies two or three digit numbers through standard algorithm	

Chapter 13:Ways to Multiply and Divide	Solve real life problems based on multiplication.	Works with large numbers a) Reads and writes numbers bigger than 1000 being used in her /his surroundings b) Performs four basic arithmetic operations on numbers beyond 1000 by understanding of place value of numbers c) Divides a given number by another number using standard algorithms Estimates sum, difference, product and quotient of numbers and verifies the same using different strategies like using standard algorithms or breaking a number and then using operation.
	Divides given numbers through nonstandard algorithm	
	Divides numbers using standard algorithms	
	Solves real life problems based on multiplication and division	
	Creates and solves patterns, games, puzzles using multiplication and division	
Chapter 14:How Big? How Heavy?	Guesses approximate volume of solid objects found in day to day life. Measures and compares the volume of solids	Estimates the volume of a solid body in known units like volume of a bucket is about 20 times that of a mug
	Calculates volume of different objects in terms of other objects.	
	Calculates the volume of solid objects using container marked with the standard units	
	Finds the volume of a cube	
	Finds the volume of cuboid	
	Solves real life problems based on volume of solids	Applies the four fundamental arithmetic operations in solving problems involving money, length, mass, capacity and time intervals
	Relates different commonly used larger and smaller units of weight and convert larger units to smaller units and vice versa.	Relates different commonly used larger and smaller units of length, weight and volume and converts larger units to smaller units and vice versa
Applies the four fundamental arithmetic operations in solving a variety of contextual problems involving weight.	Applies the four fundamental arithmetic operations in solving problems involving money, length, mass, capacity and time intervals	