

Class 7 Mathematics – Academic Plan & Competencies
[SYLLABUS WHICH IS FRAMED FOR 2026-2027](#)

• **MT1: Foundational concepts [months : APRIL-JUNE END]**

CH 1- INTEGERS

1. Knowledge & Understanding (LOTS)

Recognises integers in different forms

Identifies positive numbers, negative numbers, and zero in real-life and mathematical contexts.

Understands the concept of number line

Interprets and locates integers correctly on a number line, including negative integers.

Comprehends ordering of integers

Compares and arranges integers in ascending and descending order using number line or rules.

Understands absolute value

Interprets the absolute value of an integer as its distance from zero.

Reads and interprets integer expressions

Understands statements involving integers (e.g., gain/loss, rise/fall, profit/loss).

Recognises opposite integers

Identifies additive inverses (e.g., +5 and -5) and understands their relationship.

Understands rules of operations conceptually

Grasps the meaning behind addition, subtraction, multiplication, and division of integers.

Interprets real-life situations using integers

Connects integers with contexts like temperature, elevation, banking, and direction.

Understands properties of integers

Recognises closure, commutative, associative, and distributive properties through examples.

Decodes word problems involving integers

Reads and understands problems correctly before solving them.

2. Application [MOTS]

Applies operations of integers in problem-solving

Uses addition, subtraction, multiplication, and division of integers to solve numerical and word problems.

Solves real-life situations using integers

Applies integer concepts in contexts such as temperature changes, profit and loss, banking (debit/credit), and elevations.

Uses number line for calculations

Demonstrates addition and subtraction of integers using a number line for better understanding.

Applies rules of signs correctly

Uses sign rules accurately while performing operations involving positive and negative integers.

3. Analysis[HOTS]

Differentiates between types of integers

Analyses and distinguishes positive integers, negative integers, and zero in various contexts.

Examines relationships on the number line

Analyses the position of integers to compare magnitude and understand relative values.

Breaks down integer operations

Analyses step-by-step procedures involved in addition, subtraction, multiplication, and division of integers.

Identifies patterns and rules

Observes and explains patterns in operations (e.g., sign rules in multiplication and division).

4. Skill-Based Learning [HOTS]

Performs integer operations accurately

Develops fluency in addition, subtraction, multiplication, and division of integers.

Uses number line effectively

Demonstrates skill in representing and solving integer operations using a number line.

Applies sign rules confidently

Shows accuracy and speed in applying rules of signs during calculations.

Simplifies expressions efficiently

Solves numerical expressions involving integers using proper steps and order of operations (BODMAS).

5. Real-Life Connection

Relates integers to daily situations

Connects positive and negative numbers with real-life contexts like gain/loss, profit/loss, and credit/debit.

Applies integers in temperature contexts

Interprets temperatures above and below zero using positive and negative integers.

Understands elevation and depth

Uses integers to represent heights above sea level and depths below sea level.

Uses integers in financial literacy

Applies concepts of debit (negative) and credit (positive) in simple banking situations.

CH 2 - FRACTIONS AND DECIMALS

1. Knowledge & Understanding (LOTS)

Understands the concept of fractions

Recognises a fraction as a part of a whole, a ratio, and as division of two integers.

Identifies different types of fractions

Distinguishes between proper, improper, mixed, like, unlike, and unit fractions.

Understands equivalent fractions

Recognises and forms equivalent fractions using multiplication or division.

Knows simplification and lowest form

Understands how to reduce fractions to simplest form using common factors.

Understands comparison of fractions

Knows methods to compare fractions using common denominators or cross-multiplication.

Understands operations on fractions

Learns the rules for addition, subtraction, multiplication, and division of fractions.

Understands the concept of decimals

Recognises decimals as fractions with denominators of powers of 10.

Understands conversion between fractions and decimals

Knows how to convert fractions to decimals and decimals to fractions.

Understands operations on decimals

Learns the rules for addition, subtraction, multiplication, and division of decimals.

Understands comparison and ordering of decimals

Recognises how to compare decimals

Understands relationship between fractions and decimals

Recognises that both forms represent the same quantity in different ways.

2. Application [MOTS]

Applies operations on fractions in problem-solving

Uses addition, subtraction, multiplication, and division of fractions to solve numerical and word problems.

Applies operations on decimals accurately

Solves problems involving addition, subtraction, multiplication, and division of decimals.

Converts between fractions and decimals in practical situations

Applies conversion methods while solving real-life and mathematical problems.

Uses fractions and decimals in real-life contexts

Solves problems related to money, measurement, length, weight, and capacity.

Solves word problems involving fractions and decimals

Translates real-life situations into mathematical expressions and solves them step by step.

Applies BODMAS in expressions

Solves multi-step problems involving fractions and decimals using the correct order of operations.

3. Analysis[HOTS]**Differentiates between types of fractions and decimals**

Analyses and classifies proper, improper, mixed fractions, and terminating or recurring decimals.

Examines relationships between fractions and decimals

Analyses how fractions and decimals represent the same value in different forms.

Breaks down operations step by step

Analyses procedures involved in addition, subtraction, multiplication, and division of fractions and decimals.

Identifies patterns and rules

Observes patterns in operations (e.g., placement of decimal point, reciprocal in division of fractions).

Compares multiple solution methods

Evaluates different approaches (e.g., converting to common denominator vs decimal form) and selects efficient methods.

Interprets and simplifies expressions

Breaks down complex expressions involving fractions and decimals into manageable steps.

Justifies use of mathematical methods

Explains why a particular method or rule is used in solving a problem.

4. Skill-Based Learning [HOTS]**Performs operations on fractions accurately**

Develops fluency in addition, subtraction, multiplication, and division of fractions.

Performs operations on decimals with precision

Applies correct placement of decimal points in all operations.

Converts between fractions and decimals efficiently

Demonstrates skill in converting fractions to decimals and vice versa.

Simplifies fractions confidently

Reduces fractions to lowest terms using appropriate methods.

Works with mixed numbers effectively

Converts between mixed and improper fractions and performs operations correctly.

Applies BODMAS correctly

Solves expressions involving fractions and decimals in the correct order.

Uses appropriate methods for comparison

Applies suitable techniques (common denominator or decimal conversion) to compare values.

5. Real-Life Connection

Relates fractions to daily activities

Connects fractions with situations like sharing food, dividing objects, and portions.

Applies decimals in money transactions

Uses decimals in calculating prices, bills, discounts, and change.

Uses fractions and decimals in measurement

Applies them in length, weight, capacity, and time (e.g., 2.5 kg, $\frac{3}{4}$ metre).

Interprets data using fractions and decimals

Reads and understands charts, tables, and graphs involving fractional and decimal values.

Applies fractions in recipes and cooking

Uses fractional quantities in measuring ingredients.

Uses decimals in everyday calculations

Applies decimals in shopping, budgeting, and financial planning.

CH 3 - RATIONAL NUMBERS

1. Knowledge & Understanding (LOTS)

Understands the concept of rational numbers

Recognises a rational number as a number that can be expressed in the form $\frac{p}{q}$, where $q \neq 0$.

Identifies examples of rational numbers

Recognises integers, fractions, and terminating decimals as rational numbers.

Distinguishes between rational and irrational numbers (introductory idea)

Understands that rational numbers can be expressed as fractions, unlike irrational numbers.

Understands standard form of rational numbers

Knows how to express a rational number in its simplest form with a positive denominator.

Recognises equivalent rational numbers

Understands how to generate equivalent forms of a rational number.

Understands representation on the number line

Knows how to locate rational numbers on a number line.

Comprehends ordering of rational numbers

Understands how to compare and arrange rational numbers.

Understands basic operations on rational numbers

Learns the rules for addition, subtraction, multiplication, and division of rational numbers.

Understands the concept of reciprocal

Knows that the reciprocal of a rational number $\frac{p}{q}$ is $\frac{q}{p}$ (where $p \neq 0$).

Understands the role of zero

Recognises that zero is a rational number but has no reciprocal.

Understands positive and negative rational numbers

Identifies and interprets both positive

2. Application [MOTS]

Applies operations on rational numbers

Uses addition, subtraction, multiplication, and division of rational numbers to solve numerical problems.

Solves word problems involving rational numbers

Translates real-life situations into mathematical expressions using rational numbers.

Uses rational numbers in real-life contexts

Applies them in situations like sharing, measurement, money, and comparison of quantities.

Applies conversion between forms

Converts rational numbers between fractions, decimals, and mixed numbers when required.

Compares and orders rational numbers

Uses appropriate methods to arrange rational numbers in ascending or descending order.

Uses number line representation for application

Applies understanding of number line to solve problems involving position and comparison.

Applies properties of rational numbers

Uses commutative, associative, and distributive properties to simplify calculations.

3. Analysis[HOTS]

Differentiates between types and forms of rational numbers

Analyses fractions, decimals, positive and negative rational numbers, and their representations.

Examines relationships between equivalent rational numbers

Analyses how different fractions can represent the same value.

Breaks down operations step by step

Analyses procedures involved in addition, subtraction, multiplication, and division of rational numbers.

Identifies patterns and rules in operations

Observes patterns such as sign rules and use of reciprocals in division.

Analyses errors in calculations

Detects and corrects common mistakes in operations involving rational numbers.

Compares multiple solution strategies

Evaluates different methods (common denominator, decimal conversion) and selects efficient approaches.

4. Skill-Based Learning [HOTS]

Performs operations on rational numbers accurately

Develops fluency in addition, subtraction, multiplication, and division of rational numbers.

Simplifies rational numbers confidently

Reduces rational numbers to standard (lowest) form with ease.

Converts between different forms efficiently

Demonstrates skill in converting fractions to decimals, mixed numbers, and vice versa.

Applies sign rules correctly

Uses correct rules for positive and negative rational numbers in calculations.

Uses reciprocals effectively in division

Applies the concept of reciprocal accurately while dividing rational numbers.

Solves expressions using BODMAS

Evaluates multi-step expressions involving rational numbers systematically.

Develops mental math and estimation skills

Uses approximation to quickly check and verify answers.

Solves word problems methodically

Translates real-life situations into mathematical form and solves step by step.

5. Real-Life Connection

Relates rational numbers to daily life situations

Connects rational numbers with sharing, division, and comparison of quantities.

Applies rational numbers in measurement

Uses them in length, weight, capacity, and time (e.g., 2.5 kg, $\frac{3}{4}$ litre).

Uses rational numbers in money transactions

Applies decimals and fractions in pricing, bills, profit/loss, and budgeting.

Interprets data involving rational numbers

Reads and understands tables, charts, and graphs with fractional and decimal values.

Applies rational numbers in cooking and recipes

Uses fractional quantities for ingredients and scaling recipes.

Uses rational numbers in time and distance calculations

Applies them in speed, distance, and duration (e.g., 1.5 hours).

CH 8 - ALGEBRAIC EXPRESSIONS

1. Knowledge & Understanding (LOTS)

Understands the concept of algebraic expressions

Recognises algebraic expressions as combinations of variables, constants, and operations.

Identifies parts of an expression

Distinguishes between variables, constants, coefficients, and terms.

Classifies types of expressions

Identifies monomials, binomials, trinomials, and polynomials based on number of terms.

Understands like and unlike terms

Recognises terms that can or cannot be

Understands simplification of expressions

Knows how to combine like terms to simplify expressions.

Understands use of brackets

Recognises how brackets affect expressions and their simplification.

Knows basic operations on expressions

Understands addition and subtraction of algebraic expressions.

Understands multiplication of expressions (introductory level)

Recognises multiplication of a monomial with another monomial or polynomial.

Understands substitution of values

Knows how to substitute numerical values for variables and evaluate expressions.

Recognises algebraic expressions in word form

Translates simple verbal statements into algebraic expressions.

2. Application [MOTS]

Applies simplification of algebraic expressions

Combines like terms to simplify expressions accurately.

Performs operations on algebraic expressions

Applies addition and subtraction of algebraic expressions in problem-solving.

Applies multiplication of expressions

Multiplies a monomial with a monomial or polynomial correctly.

Uses substitution in expressions

Substitutes given values of variables and evaluates expressions.

Translates word problems into algebraic expressions

Converts verbal statements into mathematical expressions.

Applies algebraic expressions in real-life situations

Uses expressions to represent quantities like cost, distance, age, etc.

3. Analysis[HOTS]

Differentiates types of algebraic expressions

Analyses and classifies expressions into monomials, binomials, trinomials, and polynomials.

Identifies like and unlike terms

Analyses terms based on variables and powers to determine whether they can be combined.

Breaks down expressions into terms and factors

Analyses structure of expressions by separating constants, variables, and coefficients.

Examines patterns in expressions

Observes and analyses patterns formed by algebraic expressions in sequences or word problems.

Analyses simplification steps

Breaks down the process of simplifying expressions and checks correctness at each stage.

4. Skill-Based Learning [HOTS]**Simplifies algebraic expressions accurately**

Combines like terms correctly to reduce expressions to simplest form.

Performs operations on expressions efficiently

Adds and subtracts algebraic expressions with accuracy and speed.

Applies distributive property correctly

Expands expressions using multiplication over addition or subtraction.

Handles brackets properly in expressions

Removes and applies brackets correctly while simplifying expressions.

Evaluates algebraic expressions using substitution

Substitutes values of variables and calculates results accurately.

Forms algebraic expressions from verbal statements

Converts word problems into correct algebraic expressions.

Identifies and groups like terms quickly

Recognises terms with same variables and powers for simplification.

Performs multiplication of simple algebraic expressions

Multiplies monomials and simple polynomials correctly.

5. Real-Life Connection**Relates algebraic expressions to everyday situations**

Represents real-life quantities such as age, cost, distance, and time using variables and expressions.

Uses expressions to represent unknown values

Applies variables to model unknown or changing quantities in real situations.

Applies algebra in financial contexts

Uses expressions to represent total cost, discounts, savings, and simple budgeting.

Represents patterns and relationships

Uses algebraic expressions to describe number patterns and simple real-life relationships.

**Half Yearly: MT1 + new chapters (moderate depth)
(JULY - AUGUST - SEPTEMBER)**

CH 4 - EXPONENTS AND POWERS

1. Knowledge & Understanding (LOTS)

Understands the concept of exponents

Recognises exponentiation as repeated multiplication of the same number.

Identifies base and exponent

Distinguishes between the base (number being multiplied) and the power (number of times it is used).

Understands power notation

Interprets expressions of the form a^n correctly.

Understands laws of exponents (introductory level)

Knows basic laws such as multiplication and division of powers with the same base.

Understands zero exponent rule

Recognises that any non-zero number raised to the power of zero is 1.

Understands negative exponents (introductory idea)

Knows that negative exponents indicate reciprocal forms.

2. Application [MOTS]

Applies laws of exponents in simplification

Uses rules of powers (product, quotient, power of a power) to simplify expressions.

Solves numerical problems using exponents

Evaluates expressions involving powers correctly and efficiently.

Represents large numbers using exponents

Writes large numbers in exponential form for easier understanding and calculation.

Uses exponents in scientific notation (introductory level)

Represents very large or very small numbers using powers of 10.

Solves word problems involving exponents

Translates real-life situations into exponential expressions and solves them.

Applies exponents in patterns and sequences

Uses powers to represent repeated growth or patterns.

3. Analysis[HOTS]

Differentiates between base and exponent in expressions

Analyses the structure of expressions like a^n to correctly identify components.

Examines laws of exponents critically

Analyses and understands when and why laws such as product, quotient, and power of a power apply.

Identifies patterns in powers

Observes and analyses patterns in repeated multiplication and powers of numbers.

Breaks down exponential expressions step by step

Analyses complex expressions into simpler exponential forms for easier computation.

Compares different forms of representation

Analyses standard form, expanded form, and exponential form of numbers.

4. Skill-Based Learning [HOTS]

Performs calculations using laws of exponents accurately

Applies product, quotient, and power rules correctly in simplification.

Evaluates exponential expressions efficiently

Computes values of powers correctly and quickly.

Represents numbers in exponential form

Converts large numbers into powers of 10 and vice versa.

Expands and simplifies exponential expressions

Writes expressions in expanded form and simplifies them step by step.

Solves problems using BODMAS with exponents

Applies correct order of operations in multi-step calculations.

Develops mental math skills with powers

Quickly recognises and computes simple exponential values.

Solves word problems involving exponents

Converts real-life situations into exponential expressions and solves them.

Uses exponents in algebraic expressions

Simplifies expressions involving variables and powers efficiently.

5. Real-Life Connection

Relates exponents to repeated real-life multiplication

Understands situations like repeated growth (e.g., population increase, stacking, or repeated doubling).

Uses powers of 10 in daily life contexts

Applies powers of 10 in reading large numbers such as distance, population, and money.

Connects exponents with scientific notation (introductory level)

Recognises how very large or very small numbers are written using powers of 10 in science.

Applies exponents in measurement systems

Understands usage in units like square units (area) and cubic units (volume).

Relates exponents to computer storage

Recognises basic idea of data storage (KB, MB, GB) as powers of 2 or 10 (introductory awareness).

Uses exponents in growth and decay situations

Understands simple models of repeated increase or decrease (e.g., doubling money or bacteria growth).

CH 9 - LINEAR EQUATIONS (NO LINEAR INEQUALITIES)

1. Knowledge & Understanding (LOTS)

Understands the concept of a linear equation

Recognises a linear equation as an equation involving a variable with highest power 1.

Identifies parts of a linear equation

Distinguishes between variables, constants, coefficients, and the equality sign.

Understands balance concept of equations

Recognises that both sides of an equation must remain equal while performing operations.

Understands solution of an equation

Knows that solving an equation means finding the value of the unknown variable.

Understands transposition of terms

Recognises the concept of shifting terms from one side of the equation to the other.

Understands verification of solution

Knows how to substitute the value of the variable to check correctness.

Understands formation of linear equations

Recognises how real-life statements can be written as equations.

2. Application [MOTS]

Solves simple linear equations in one variable

Applies step-by-step methods to find the value of the unknown.

Applies inverse operations to solve equations

Uses addition, subtraction, multiplication, and division to isolate variables.

Uses transposition method effectively

Solves equations by shifting terms from one side to another correctly.

Checks solutions by substitution

Verifies answers by substituting the value back into the original equation.

Forms linear equations from word problems

Converts real-life situations into mathematical equations.

Solves word problems using linear equations

Applies equations to find unknown quantities in practical situations.

3. Analysis[HOTS]

Differentiates between expressions and linear equations

Analyses the presence of an equality sign and identifies equations correctly.

Identifies structure of linear equations

Breaks down equations into left-hand side, right-hand side, variables, and constants.

Examines different forms of linear equations

Analyses equations with variables on one side or both sides, with or without brackets.

Analyzes step-by-step solution methods

Breaks down the process of solving equations using transposition or balancing method.

Identifies errors in solving equations

Detects mistakes in sign changes, operations, or simplification steps.

Analyzes the effect of operations on both sides

Understands how adding, subtracting, multiplying, or dividing affects equality.

Checks validity of solutions

Substitutes values to verify whether the equation is satisfied.

4. Skill-Based Learning [HOTS]**Solves linear equations accurately**

Develops fluency in solving one-variable linear equations using step-by-step methods.

Applies inverse operations correctly

Uses addition, subtraction, multiplication, and division to isolate variables efficiently.

Uses transposition method skillfully

Moves terms from one side of the equation to the other with correct sign changes.

Maintains balance in equations

Ensures that operations are performed equally on both sides of the equation.

Solves equations involving brackets

Expands and simplifies expressions before solving equations correctly.

Handles fractional and integer coefficients

Solves equations involving different types of numerical coefficients with accuracy.

5. Real-Life Connection**Relates linear equations to daily life situations**

Uses equations to represent unknown quantities in everyday contexts like age, money, and numbers.

Solves age-related problems using equations

Represents present and future ages using linear equations.

Applies equations in money and finance problems

Uses linear equations to solve problems involving cost, savings, and simple transactions.

Uses equations in number-related problems

Finds unknown numbers based on given relationships or conditions.

Applies linear equations in measurement problems

Uses equations in length, weight, and capacity-based real-life situations.

Interprets word problems into real-life equations

Converts practical situations into mathematical models.

CH 10 - LINES AND ANGLES

1. Knowledge & Understanding (LOTS)

Understands basic geometric concepts of lines

Recognises different types of lines such as line, line segment, and ray.

Identifies types of angles

Understands acute, right, obtuse, straight, reflex, and complete angles.

Understands measurement of angles

Knows that angles are measured in degrees using a protractor.

Understands relationship between lines and angles

Recognises how intersecting lines form angles.

Understands complementary and supplementary angles

Knows that complementary angles add up to 90° and supplementary angles add up to 180° .

Understands adjacent angles

Recognises angles that share a common arm and vertex.

Understands linear pair of angles

Knows that linear pairs form a straight line and sum to 180° .

Understands vertically opposite angles

Recognises that vertically opposite angles are equal when two lines intersect.

Understands parallel and transversal lines (introductory level)

Recognises angles formed when a transversal cuts parallel lines.

2. Application [MOTS]

Measures and constructs angles accurately

Uses a protractor to draw and measure different types of angles correctly.

Identifies and applies angle relationships

Uses concepts of complementary, supplementary, adjacent, and linear pair angles in problem solving.

Applies properties of intersecting lines

Solves problems using the fact that vertically opposite angles are equal.

Uses angle rules in geometric problems

Applies known angle relationships to find unknown angles in diagrams.

Solves problems involving parallel lines and transversal (introductory level)

Uses basic angle properties formed when a transversal cuts parallel lines.

Applies angle concepts in real-life situations

Solves practical problems involving turning angles, directions, and positions.

3. Analysis[HOTS]

Differentiates types of lines and angles

Analyses and distinguishes between line, line segment, ray, and different types of angles.

Examines relationships between angles

Analyses complementary, supplementary, adjacent, linear pair, and vertically opposite angles.

Identifies angle properties in diagrams

Breaks down geometric figures to recognise angle relationships.

Analyses angle formation due to intersecting lines

Studies how angles are formed when lines intersect.

Analyzes properties of vertically opposite angles

Understands and verifies why vertically opposite angles are equal.

Breaks down complex geometric figures

Separates diagrams into simpler angle relationships for easier understanding.

Analyzes parallel lines with transversal (introductory level)

Identifies corresponding, alternate, and co-interior angles in diagrams.

4. Skill-Based Learning [HOTS]

Measures angles accurately using a protractor

Develops precision in measuring different types of angles.

Draws lines, rays, and line segments correctly

Uses ruler and compass with accuracy and neatness.

Constructs angles of given measures

Creates angles such as 30° , 45° , 60° , 90° , etc., using proper steps.

Identifies angle types quickly and correctly

Recognises acute, obtuse, right, straight, and reflex angles efficiently.

Applies angle rules in problem solving

Uses properties of complementary, supplementary, and vertically opposite angles correctly.

Solves geometric problems step by step

Follows logical sequencing to find unknown angles in diagrams.

5. Real-Life Connection

Relates angles to everyday objects

Identifies angles in objects like scissors, clocks, doors, and open books.

Applies angle concepts in direction and navigation

Uses turns, rotations, and directions (left, right, straight) in real-life movement.

Connects angles with architecture and design

Recognises angles in buildings, bridges, tiles, and road structures.

Uses angles in clock-related problems

Understands angles formed by hour and minute hands at different times.

Applies lines and angles in sports activities

Observes angles and directions in games like football, cricket, and basketball.

CH 11 - TRIANGLES AND ITS PROPERTIES

1. Knowledge & Understanding (LOTS)

Understands the concept of a triangle

Recognises a triangle as a closed plane figure with three sides, three vertices, and three angles.

Identifies parts of a triangle

Understands sides, vertices, angles, base, and height of a triangle.

Classifies triangles based on sides

Recognises scalene, isosceles, and equilateral triangles.

Classifies triangles based on angles

Identifies acute-angled, right-angled, and obtuse-angled triangles.

Understands angle sum property of a triangle

Knows that the sum of interior angles of a triangle is 180° .

Understands exterior angle property (introductory level)

Recognises that an exterior angle equals the sum of two opposite interior angles.

Understands relationship between sides and angles

Knows that larger angles are opposite longer sides in a triangle.

2. Application [MOTS]

Applies angle sum property of a triangle

Finds missing angles using the fact that the sum of interior angles is 180° .

Uses exterior angle property in problem solving

Calculates unknown angles using the exterior angle equals sum of opposite interior angles rule.

Applies triangle classification in problems

Identifies and uses properties of scalene, isosceles, and equilateral triangles.

Solves problems using side-angle relationship

Applies the rule that the larger angle lies opposite the longer side.

3. Analysis[HOTS]

Differentiates types of triangles

Analyses and classifies triangles based on sides (scalene, isosceles, equilateral) and angles (acute, right, obtuse).

Examines angle relationships in triangles

Analyses how interior angles sum to 180° and applies this property in different cases.

Analyzes exterior angle relationships

Breaks down and verifies that an exterior angle equals the sum of two opposite interior angles.

Identifies patterns in triangle properties

Observes relationships between sides and opposite angles.

4. Skill-Based Learning [HOTS]

Solves triangle-based problems accurately

Applies properties like angle sum and exterior angle rules to find unknown values.

Applies angle sum property efficiently

Calculates missing angles in triangles using 180° rule correctly.

Uses exterior angle property in computations

Finds unknown angles using the relationship between exterior and interior angles.

Identifies triangle types quickly and correctly

Classifies triangles based on sides and angles with accuracy.

5. Real-Life Connection

Recognises triangles in everyday objects

Identifies triangular shapes in road signs, bridges, roofs, and structures.

Applies triangle concept in construction and architecture

Understands why triangles are used for strong and stable structures.

Connects triangle properties with stability

Recognises that triangles are rigid shapes used in building frameworks.

Uses triangle angle sum in practical situations

Applies 180° rule in real-life design and layout problems.

Identifies triangular patterns in art and design

Observes triangles in tiles, decorations, and patterns.

Applies triangle knowledge in engineering contexts (introductory level)

Understands basic use of triangular structures in bridges and towers.

CH 13 - PRACTICAL GEOMETRY

1. Knowledge & Understanding (LOTS)

Understands the concept of construction in geometry

Recognises that practical geometry involves drawing accurate figures using tools.

Identifies basic geometrical tools

Understands the use of ruler, compass, protractor, and set squares.

Understands construction of line segments

Knows how to draw line segments of given lengths accurately.

Understands construction of angles

Recognises the steps for constructing angles of given measures using a protractor.

Understands construction of perpendicular lines

Knows how to draw perpendiculars to lines using geometrical tools.

Understands construction of parallel lines

Recognises basic methods of drawing parallel lines at a given distance.

Understands construction of triangles (basic level)

Knows that triangles can be constructed when certain measurements are given (SSS, SAS, ASA – introductory awareness).

2. Application [MOTS]

Constructs line segments accurately

Draws line segments of given lengths using ruler and compass.

Constructs angles of given measures

Uses a protractor to draw angles accurately and neatly.

Constructs angle bisectors

Divides a given angle into two equal parts using compass and ruler.

Constructs perpendicular lines

Draws perpendiculars to a line from a point on or outside the line.

Constructs parallel lines

Draws parallel lines at a given distance using geometrical tools.

Constructs triangles using given measurements (basic cases)

Constructs triangles using simple cases like SSS, SAS, ASA (introductory level).

3. Analysis[HOTS]

Differentiates construction steps and methods

Analyses different procedures used for constructing line segments, angles, and triangles.

Examines correctness of geometric constructions

Checks whether constructed figures satisfy given measurements and conditions.

Identifies errors in constructions

Detects mistakes in use of compass, ruler, or protractor during constructions.

Analyses choice of construction method

Evaluates whether the correct method (e.g., SSS, SAS, ASA for triangles) is used.

4. Skill-Based Learning [HOTS]

Constructs line segments accurately

Draws line segments of given lengths using ruler and compass with precision.

Constructs angles of given measures

Uses a protractor correctly to construct angles of required degree measures.

Constructs angle bisectors efficiently

Divides angles into two equal parts using compass and ruler with accuracy.

Constructs perpendicular lines correctly

Draws perpendiculars from a point on or outside a line using proper steps.

Constructs parallel lines accurately

Uses correct methods to draw parallel lines at a given distance.

Constructs triangles using given conditions

Builds triangles using basic cases like SSS, SAS, and ASA with proper sequence.

5. Real-Life Connection

Recognises use of constructions in daily life

Understands that practical geometry is used in drawing accurate shapes and designs in real situations.

Connects constructions with architecture and buildings

Observes how line segments, angles, and triangles are used in building design and structures.

Applies geometric drawing in engineering work (introductory awareness)

Recognises that engineers use constructions for planning roads, bridges, and machines.

Uses constructions in design and art

Identifies geometric patterns in art, decoration, and craft work.

Relates triangles to strong structures

Understands that triangular shapes are used in frameworks for stability.

CH 14 - SYMMETRY

1. Knowledge & Understanding (LOTS)

Understands the concept of symmetry

Recognises symmetry as a balanced and identical arrangement of parts on both sides of a line or around a point.

Identifies line of symmetry

Understands that a line of symmetry divides a figure into two identical halves.

Recognises symmetrical and non-symmetrical shapes

Distinguishes between shapes that have symmetry and those that do not.

Understands types of symmetry

Knows basic ideas of line symmetry and rotational symmetry (introductory level).

Identifies symmetry in alphabets and numbers

Recognises symmetrical letters (A, H, M, O, etc.) and numbers where applicable.

Understands symmetry in geometric figures

Identifies symmetry in squares, rectangles, circles, triangles, etc.

Understands rotational symmetry (basic idea)

Recognises that some shapes look the same after rotation.

Knows order of rotational symmetry (introductory level)

Understands that a shape can fit into itself a certain number of times during rotation.

Understands symmetry in patterns

Recognises symmetry in designs, rangoli, tiles, and decorative patterns.

Understands reflection symmetry

Knows that symmetry can be seen as a mirror image across a line.

Understands real-life examples of symmetry

Identifies symmetry in nature like leaves, butterflies, flowers, etc.

2. Application [MOTS]

Identifies lines of symmetry in shapes

Applies understanding to find one or more lines of symmetry in different figures.

Completes symmetrical figures

Draws the missing half of a shape using the concept of reflection symmetry.

Applies symmetry in geometric drawings

Uses symmetry to construct balanced and accurate figures.

Uses symmetry in alphabets and numbers

Identifies and applies symmetry in letters and numerals.

Applies symmetry in patterns and designs

Creates and extends symmetrical patterns such as rangoli and tiling designs.

Identifies rotational symmetry in figures

Determines whether a shape looks the same after rotation.

Applies symmetry to complete patterns

Fills in missing parts of designs using symmetrical rules.

Uses symmetry in problem-solving

Solves geometry-based questions involving reflection and rotation.

3. Analysis[HOTS]

Differentiates types of symmetry

Analyses and distinguishes between line symmetry and rotational symmetry.

Identifies number of lines of symmetry

Examines different shapes to determine how many lines of symmetry they have.

Analyzes symmetrical and non-symmetrical figures

Compares shapes to decide whether they are symmetrical or not.

Examines rotational symmetry and order

Analyses how many times a shape fits onto itself during rotation.

Identifies symmetry in complex figures

Breaks down figures to locate hidden or multiple lines of symmetry.

Analyzes patterns for symmetry

Studies designs, rangoli, and tiling patterns for symmetrical structure.

Identifies errors in symmetry drawing

Detects mistakes in incomplete or incorrectly drawn symmetrical figures.

Compares different symmetrical shapes

Analyses similarities and differences in symmetry properties of shapes.

Analyzes symmetry in alphabets and numbers

Examines which letters or numbers show vertical, horizontal, or no symmetry.

Justifies symmetry properties

Explains why a shape is symmetrical or not based on its structure.

4. Skill-Based Learning [HOTS]

Identifies lines of symmetry accurately

Recognises and draws lines of symmetry in different shapes with precision.

Draws symmetrical figures correctly

Completes figures by reflecting them across a given line of symmetry.

Constructs mirror images skillfully

Uses grid lines or tracing methods to create accurate reflections.

Applies symmetry in geometric drawings

Uses symmetry to draw balanced and proportionate shapes.

Recognises symmetry in alphabets and numbers quickly

Identifies symmetrical letters and numerals with ease.

Determines rotational symmetry efficiently

Finds the order of rotational symmetry of shapes correctly.

Creates symmetrical patterns and designs

Designs patterns like rangoli, tiles, and borders using symmetry.

5. Real-Life Connection

Recognises symmetry in nature

Identifies symmetrical patterns in leaves, flowers, butterflies, and human body structures.

Relates symmetry to everyday objects

Observes symmetry in objects like doors, windows, books, and utensils.

Applies symmetry in art and design

Uses symmetry in drawings, rangoli, paintings, and decorative patterns.

Connects symmetry with architecture

Recognises symmetrical designs in buildings, monuments, and bridges.

Uses symmetry in logos and symbols

Identifies symmetry in common logos, emblems, and signs.

Applies symmetry in clothing and textiles

Observes symmetrical patterns in fabrics, embroidery, and designs.

Relates symmetry to reflection in mirrors

Understands mirror images as examples of line symmetry.

MT2 (OCTOBER - NOVEMBER)

NEW CHAPTER (CH 6 - RATIO AND PROPORTION) + CH 9 - LINEAR EQUATIONS (NO LINEAR INEQUALITIES) + CH 13 - PRACTICAL GEOMETRY

CH 6 - RATIO AND PROPORTION

1. Knowledge & Understanding (LOTS)

Understands the concept of ratio

Recognises ratio as a comparison of two quantities of the same kind.

Understands notation of ratio

Knows how to express ratio in the form $a:ba$: $ba:b$ and as a fraction.

Identifies terms of a ratio

Distinguishes between antecedent and consequent.

Understands simplification of ratios

Knows how to reduce ratios to their simplest form.

Understands equivalent ratios

Recognises that multiplying or dividing both terms by the same number gives equivalent ratios.

Understands comparison of ratios

Knows how to compare two or more ratios.

Understands the concept of proportion

Recognises proportion as equality of two ratios.

Identifies terms of proportion

Understands means and extremes in a proportion.

Understands fundamental property of proportion

Knows that product of means equals product of extremes.

Understands unitary method (introductory level)

Recognises how to find value of one unit and extend it to many.

2. Application [MOTS]

Applies ratio in comparison of quantities

Uses ratios to compare two or more quantities in real-life situations.

Simplifies ratios accurately

Reduces ratios to simplest form for easy interpretation.

Finds equivalent ratios

Generates and applies equivalent ratios in problem-solving.

Solves problems using proportion

Applies the concept of proportion to find unknown values.

Uses cross-multiplication method

Solves proportions using the fundamental property (product of means = product of extremes).

Applies unitary method in problem solving

Finds the value of one unit and extends it to multiple units.

Solves real-life problems involving ratio and proportion

Applies concepts in contexts like sharing, mixing, and comparison.

3. Analysis[HOTS]

Differentiates between ratio and proportion

Analyses and distinguishes comparison (ratio) from equality of ratios (proportion).

Examines components of ratio and proportion

Analyses antecedent, consequent, means, and extremes in given expressions.

Identifies equivalent ratios

Examines how different ratios represent the same relationship.

Analyzes simplification of ratios

Breaks down ratios into simplest form and checks correctness.

Applies and analyzes cross-multiplication

Verifies proportions using the property of means and extremes.

Distinguishes between direct and inverse proportion

Analyses situations to identify the type of proportional relationship.

Breaks down word problems logically

Converts real-life situations into ratios or proportions step by step.

4. Skill-Based Learning [HOTS]

Simplifies ratios accurately

Reduces ratios to their lowest terms using common factors.

Forms and identifies equivalent ratios

Generates equivalent ratios by multiplying or dividing both terms correctly.

Compares ratios efficiently

Uses suitable methods (common denominator or cross-multiplication) to compare ratios.

Solves proportions using cross-multiplication

Applies the fundamental property (product of means = product of extremes) accurately.

Applies unitary method skillfully

Finds the value of one unit and extends it to solve problems.

Divides quantities in a given ratio correctly

Splits amounts into required parts based on given ratios.

5. Real-Life Connection

Relates ratio to daily comparisons

Uses ratio to compare quantities such as number of boys to girls, items, or distances.

Applies ratio in sharing and distribution

Divides quantities like money, sweets, or resources in a given ratio.

Uses proportion in practical problem solving

Applies proportion to find unknown values in real-life situations.

Applies unitary method in everyday contexts

Solves problems like cost of items, wages, and quantity using unitary method.

Uses ratio and proportion in cooking and recipes

Adjusts ingredients based on number of people.

Applies ratio in financial contexts

Uses ratios in profit-sharing, budgeting, and simple financial comparisons.

FINAL TERM (DECEMBER - JANUARY - MARCH)

NEW CHAPTERS (CH 5 - SETS, CH 7 - PERCENTAGE AND ITS APPLICATION, CH 12 - CONGRUENCE OF TRIANGLES, CH 15 - VISUALISING SOLID SHAPES, CH 16 - PERIMETER AND AREA, CH 17 - DATA HANDLING) + MT1 + HALF YEARLY + MT2

CH 5 - SETS

1. Knowledge & Understanding (LOTS)

Understands the concept of a set

Recognises a set as a well-defined collection of objects.

Identifies elements of a set

Understands that the objects in a set are called elements or members.

Understands representation of sets

Knows how to represent sets using roster (listing) form and description (set-builder) form (basic idea).

Identifies types of sets

Recognises empty set, singleton set, finite set, and infinite set.

Understands cardinality of a set

Knows how to count the number of elements in a set.

Understands subset concept

Recognises when one set is a subset of another.

Understands universal set (basic idea)

Recognises the universal set as the set containing all elements under consideration.

2. Application [MOTS]

Represents sets in different forms

Writes sets using roster form and simple set-builder form.

Identifies elements and membership correctly

Uses symbols like \in and \notin to show belonging of elements.

Finds subsets of a given set

Lists and identifies subsets, including proper subsets.

Applies concept of cardinality

Counts the number of elements in finite sets accurately.

3. Analysis[HOTS]

Differentiate between types of sets

- Analyze and distinguish between finite, infinite, equal, equivalent, and null (empty) sets.
- Justify their classification with proper reasoning.

Examine relationships between sets

- Identify and analyze subset and superset relationships.
- Determine whether two sets are equal or not with logical explanation.

4. Skill-Based Learning [HOTS]

Represent sets accurately

- Write sets in roster form and set-builder form correctly.
- Use proper notation and symbols with clarity and precision.

Use symbols and notation fluently

- Apply symbols like \in , \notin , \subset , \subseteq correctly in different contexts.
- Translate statements into symbolic form and vice versa.

5. Real-Life Connection

Relate sets to everyday collections

- Identify sets in daily life (e.g., group of fruits, books, students in a class).
- Recognize how objects are grouped based on common characteristics.

Apply sets in surveys and data collection

- Use sets to represent responses (e.g., students who like cricket, football, or both).

Use sets in classification tasks

- Classify objects based on properties such as color, size, or type.
- Create subsets from a larger group in real-life contexts.

CH 7 - PERCENTAGE AND ITS APPLICATION

1. Knowledge & Understanding (LOTS) Understand the concept of percentage

- Define percentage as “per hundred.”
- Relate percentage to fractions and decimals.

Convert between forms

- Convert percentages to fractions and decimals and vice versa.
- Express quantities in percentage form correctly.

Identify types of percentage problems

- Recognize situations involving increase, decrease, profit, loss, discount, etc.
- Understand percentage as a way of comparing quantities.

Understand percentage as a ratio

- Relate percentage to ratio and proportion.
- Interpret percentage values in different contexts.

Comprehend percentage increase and decrease

- Understand how quantities change in terms of percentage.
- Recognize real-life examples such as price rise or reduction.

2. Application [MOTS]

Calculate percentage of quantities in real-life contexts

- Find percentages of given numbers (e.g., marks, population, money).
- Apply percentage in everyday numerical situations.

Solve problems on percentage increase and decrease

- Calculate new values after percentage change.
- Apply in contexts like price rise, discounts, and growth.

Apply percentage in profit and loss

- Calculate profit%, loss%, cost price (CP), and selling price (SP).
- Solve real-life buying and selling problems.

Use percentage in discount calculations

- Determine discount amount and final price.
- Compare different discount offers in practical scenarios.

3. Analysis[HOTS]

Differentiate between related percentage concepts

- Analyze and distinguish between percentage, fraction, and decimal forms.
- Compare their usage in different contexts.

Examine percentage increase and decrease critically

- Analyze the effect of percentage change on quantities.
- Compare successive increases and decreases and their impact.

Analyze profit and loss situations

- Interpret relationships between cost price, selling price, and profit/loss%.
- Evaluate different scenarios to determine better outcomes.

Evaluate discount and pricing strategies

- Compare multiple discount offers (e.g., flat discount vs successive discounts).
- Analyze which option is more beneficial with justification.

4. Skill-Based Learning [HOTS]

Perform accurate percentage calculations

- Find percentage of a number quickly and correctly.
- Use mental math and written methods efficiently.

Convert between fraction, decimal, and percentage forms

- Change one form to another with speed and accuracy.
- Simplify results where required.

Apply standard formulas correctly

- Use formulas for profit%, loss%, discount, and simple interest.
- Substitute values correctly and solve step-by-step.

Solve problems systematically

- Follow clear steps in solving percentage-based word problems.
- Present solutions in an organized manner.

Calculate percentage increase and decrease

- Determine new values after change.
- Apply appropriate methods for different types of problems.

5. Real-Life Connection

Relate percentage to daily life situations

- Identify use of percentages in marks, shopping, population, and statistics.
- Recognize percentage as a common way of comparison.

Apply percentage in shopping contexts

- Calculate discounts, sale prices, and savings.
- Compare different offers to make smart purchasing decisions.

Use percentage in financial literacy

- Understand simple interest, savings, and basic banking concepts.
- Interpret rates such as interest rates and tax percentages.

Interpret academic performance

- Calculate and analyze percentage of marks.
- Compare performance using percentages.

Apply percentage in profit and loss situations

- Understand business scenarios like buying and selling goods.
- Calculate profit or loss in everyday transactions.

CH 12 - CONGRUENCE OF TRIANGLES

1. Knowledge & Understanding (LOTS)

Understand the concept of congruence

- Define congruent figures and congruent triangles.
- Recognize that congruent triangles are identical in shape and size.

Identify corresponding parts of congruent triangles

- Match corresponding sides and angles correctly.
- Use proper notation to represent congruence (e.g., $\triangle ABC \cong \triangle DEF$).

Know the conditions of congruence

- Understand and state the criteria: SSS, SAS, ASA, and RHS.

- Recognize when each condition can be applied.

Understand the meaning of each congruence

- Interpret Side-Side-Side (SSS), Side-Angle-Side (SAS), Angle-Side-Angle (ASA), and Right angle-Hypotenuse-Side (RHS).
- Explain why these conditions guarantee congruence.

Recognize congruent triangles in figures

- Identify congruent triangles in given diagrams.
- Understand how congruence is used in geometric constructions.

2. Application [MOTS]

Apply congruence criteria to verify triangles

- Use SSS, SAS, ASA, and RHS conditions to prove that two triangles are congruent.
- Identify the appropriate criterion based on given information.

Use CPCT in problem-solving

- Apply the concept that corresponding parts of congruent triangles are equal.
- Find unknown sides and angles using CPCT.

Solve geometrical problems involving congruence

- Use congruence to solve problems related to lengths, angles, and shapes.
- Apply reasoning to justify each step.

Apply congruence in constructions

- Construct triangles using given measurements and verify congruence.
- Use compass and ruler effectively.

3. Analysis[HOTS]

Differentiate between congruence criteria

- Analyze and distinguish between SSS, SAS, ASA, and RHS conditions.
- Justify why a particular criterion is applicable in a given situation.

Examine relationships between triangle elements

- Analyze corresponding sides and angles in given triangles.
- Determine congruence based on partial or indirect information.

Interpret geometric diagrams critically

- Analyze diagrams to identify congruent triangles.
- Recognize hidden or overlapping congruent parts in complex figures.

Evaluate the validity of congruence statements

- Check whether given information is sufficient to prove congruence.
- Identify incorrect or incomplete arguments.

4. Skill-Based Learning [HOTS]

Draw and construct triangles accurately

- Use ruler, compass, and protractor to construct triangles based on given conditions (SSS, SAS, ASA, RHS).
- Maintain precision in measurements and neatness in diagrams.

Apply congruence criteria correctly

- Identify and use the appropriate congruence rule in different problems.
- Solve problems step-by-step with proper justification.

Use correct mathematical notation

- Write congruence statements accurately (e.g., $\triangle ABC \cong \triangle DEF$).
- Maintain correct order of corresponding vertices.

Identify corresponding parts efficiently

- Match corresponding sides and angles in congruent triangles.
- Label diagrams clearly to avoid confusion.

Use CPCT effectively

- Apply CPCT to find unknown sides and angles.
- Present results clearly with proper reasoning.

5. Real-Life Connection

Relate congruence to everyday objects

- Identify congruent shapes in daily life (e.g., tiles, windows, book covers).
- Recognize identical shapes and sizes in surroundings.

Apply congruence in design and patterns

- Understand how congruent triangles are used in art, rangoli, and decorative patterns.
- Recognize symmetry and repetition in designs.

Use congruence in construction and engineering

- Understand the role of congruent triangles in making stable structures (e.g., bridges, towers).
- Relate congruence to strength and uniformity in frameworks.

Apply congruence in measurement and accuracy

- Use congruence to ensure equal lengths and angles in practical tasks.
- Understand its importance in carpentry, tailoring, and architecture.

CH 15 - VISUALISING SOLID SHAPES

1. Knowledge & Understanding (LOTS)

Understand the concept of solid shapes

- Identify three-dimensional (3D) objects.
- Differentiate between 2D and 3D shapes.

Recognize common solid shapes

- Identify cubes, cuboids, cylinders, cones, and spheres.
- Relate solid shapes to real-life objects.

Understand properties of solid shapes

- Identify faces, edges, and vertices of solids.
- Describe the shape and number of faces of each solid.

Differentiate between types of solids

- Distinguish between polyhedra and non-polyhedra.
- Identify regular and irregular solids.

2. Application [MOTS]

Apply knowledge of solid shapes in real-life contexts

- Identify and relate 3D shapes to everyday objects (e.g., boxes, cans, balls).
- Classify objects based on their shapes.

Use properties of solids to solve problems

- Apply knowledge of faces, edges, and vertices in identifying and describing solids.
- Solve questions based on counting and comparing these properties.

Interpret and draw different views of solids

- Represent top view, front view, and side view of simple objects.
- Match 2D views with corresponding 3D shapes.

3. Analysis[HOTS]

Differentiate between types of solid shapes

- Analyze and distinguish between polyhedra and non-polyhedra.
- Compare properties of cubes, cuboids, cylinders, cones, and spheres.

Examine properties of solids critically

- Analyze the number of faces, edges, and vertices.
- Identify relationships between these elements.

Interpret multiple views of solids

- Analyze top, front, and side views to identify the 3D object.
- Compare different views and reconstruct the solid mentally.

4. Skill-Based Learning [HOTS]

Identify and classify solid shapes accurately

- **Recognize cubes, cuboids, cylinders, cones, and spheres in different contexts.**
- **Classify solids based on their properties.**

Draw and represent 3D shapes

- **Sketch simple solid shapes with correct proportions.**

- Represent solids using 2D drawings.

5. Real-Life Connection

Relate solid shapes to everyday objects

- Identify cubes, cuboids, cylinders, cones, and spheres in daily life (e.g., boxes, cans, balls, ice-cream cones).
- Recognize how common objects are based on geometric solids.

Apply understanding in packaging and storage

- Understand how boxes, cartons, and containers are designed using nets of solids.
- Compare shapes for efficient storage and packing.

Use solid shapes in construction and architecture

- Recognize the use of 3D shapes in buildings, towers, and structures.
- Understand why certain shapes are used for strength and stability.

CH 16 - PERIMETER AND AREA

1. Knowledge & Understanding (LOTS)

Understand the meaning of perimeter as the total length of the boundary of a closed figure.

Understand area as the measure of the surface enclosed within a boundary. Distinguish clearly between perimeter (linear measure) and area (square units).

Recognize and use appropriate units:

- Perimeter → cm, m, km
- Area → cm², m², km²

Understand conversion between different units of length and area.

Recall and understand formulae for:

- Rectangle → Perimeter = $2(l + b)$, Area = $l \times b$
- Square → Perimeter = $4a$, Area = a^2
- Triangle → Perimeter = sum of sides, Area = $\frac{1}{2} \times \text{base} \times \text{height}$
- Parallelogram → Area = base \times height
- Circle → Circumference = $2\pi r$, Area = πr^2

Understand what each variable in the formula represents.

2. Application [MOTS]

Apply appropriate formulae to calculate perimeter and area of:

- **Rectangle, square, triangle, parallelogram, and circle.**

Substitute given values correctly into formulae to obtain results.

Solve numerical and word problems involving perimeter and area.

Determine missing dimensions when perimeter or area is given.

Use logical steps to arrive at solutions in multi-step problems.

Apply concepts to practical situations such as:

- **Finding the cost of fencing a field (perimeter).**
- **Calculating area for flooring, painting, or tiling.**

Estimate materials required based on area and perimeter.

Use appropriate units while solving problems.

Convert units (e.g., cm to m, m² to cm²) as required in practical problems.

3. Analysis[HOTS]

Compare different shapes based on their perimeter and area.

Analyze situations where shapes have:

- **Same perimeter but different areas**
- **Same area but different perimeters**

Examine how changes in dimensions (length, breadth, radius, etc.) affect perimeter and area.

Analyze proportional changes (e.g., doubling sides and its effect on area and perimeter).

Break down composite figures into simpler shapes for analysis.

Evaluate different methods to calculate area and perimeter of irregular figures.

4. Skill-Based Learning [HOTS]

Accurately measure lengths using appropriate tools (ruler, measuring tape).

Record measurements with correct units and precision.

Draw geometric figures (square, rectangle, triangle, circle, parallelogram) with given dimensions.

Construct shapes with specified perimeter or area using scale and grid.

Perform accurate calculations of perimeter and area using correct formulae.

Carry out arithmetic operations (addition, multiplication, unit conversion) efficiently.

5. Real-Life Connection

Relate perimeter to real-life needs such as fencing a garden, boundary walls, or framing.

Relate area to activities like flooring, painting walls, carpeting, and land measurement.

Solve real-world problems involving cost estimation (e.g., cost of tiles, paint, fencing).

Calculate material requirements based on given dimensions (tiles, grass, wire, etc.).

Measure real objects (rooms, fields, books, playgrounds) and calculate their perimeter and area.

Use appropriate tools like measuring tape in real-life scenarios.

CH 17 - DATA HANDLING

1. Knowledge & Understanding (LOTS)

Understand the meaning of **data** and its importance in everyday life.

Differentiate between **raw data** and **organized data**.

Identify types of data such as **discrete** and **continuous data** (introductory level).

Understand methods of data collection (observation, surveys, experiments).

Recognize how to organize data using **tables** and **lists**.

Understand the concept of **frequency** and **frequency distribution tables**.

Understand different ways of representing data:

- **Pictographs**
- **Bar graphs**
- **Double bar graphs**

Interpret the components of graphs (title, axes, scale, labels, legend).

Understand the concept of:

- **Mean (average)**
- **Median**
- **Mode**

Recognize situations where each measure is useful.

2. Application [MOTS]

Apply appropriate methods (survey, observation, questionnaire) to collect data.

Frame simple questions for gathering relevant and reliable data.

**Organize raw data into tables using tally marks and frequency distribution.
Classify data into suitable categories or groups for easy understanding.
Construct and represent data using:**

- **Bar graphs**
- **Double bar graphs**
- **Pictographs**

**Choose suitable scales and label axes correctly.
Calculate:**

- **Mean (average)**
- **Median**
- **Mode**
- **Range**

Apply appropriate formulas and methods in different situations.

3. Analysis[HOTS]

Analyze data presented in tables, bar graphs, pictographs, and double bar graphs.

Identify key information, trends, and patterns from the data.

Compare two or more data sets to find similarities and differences.

Evaluate which data set shows higher, lower, or equal values and justify conclusions.

Identify increasing, decreasing, or constant trends in data.

Analyze patterns over time or across categories.

Compare mean, median, and mode of a data set.

Analyze which measure best represents the data in a given situation.

4. Skill-Based Learning [HOTS]

Collect data systematically using surveys, observations, and questionnaires.

Record responses accurately and neatly.

Organize raw data into tables using tally marks and frequency.

Classify and group data logically for better understanding.

Construct:

- **Bar graphs**
- **Double bar graphs**
- **Pictographs**

Choose appropriate scales and label axes clearly and correctly.

Accurately calculate:

- **Mean (average)**
- **Median**

- **Mode**
- **Range**

Perform arithmetic operations carefully while handling data.

5. Real-Life Connection

Relate data handling to everyday situations such as weather reports, exam results, sports statistics, and surveys.

Understand how data is used to present information clearly in newspapers, TV, and the internet.

Collect real-life data from surroundings (e.g., class preferences, daily temperatures, market prices).

Conduct simple surveys and record findings systematically.

Use data to solve practical problems such as comparing prices, tracking expenses, or analyzing performance.

Interpret data to answer real-world questions.

Use data to make informed decisions (e.g., choosing the best option based on comparison).

Justify decisions using evidence from collected or given data.

