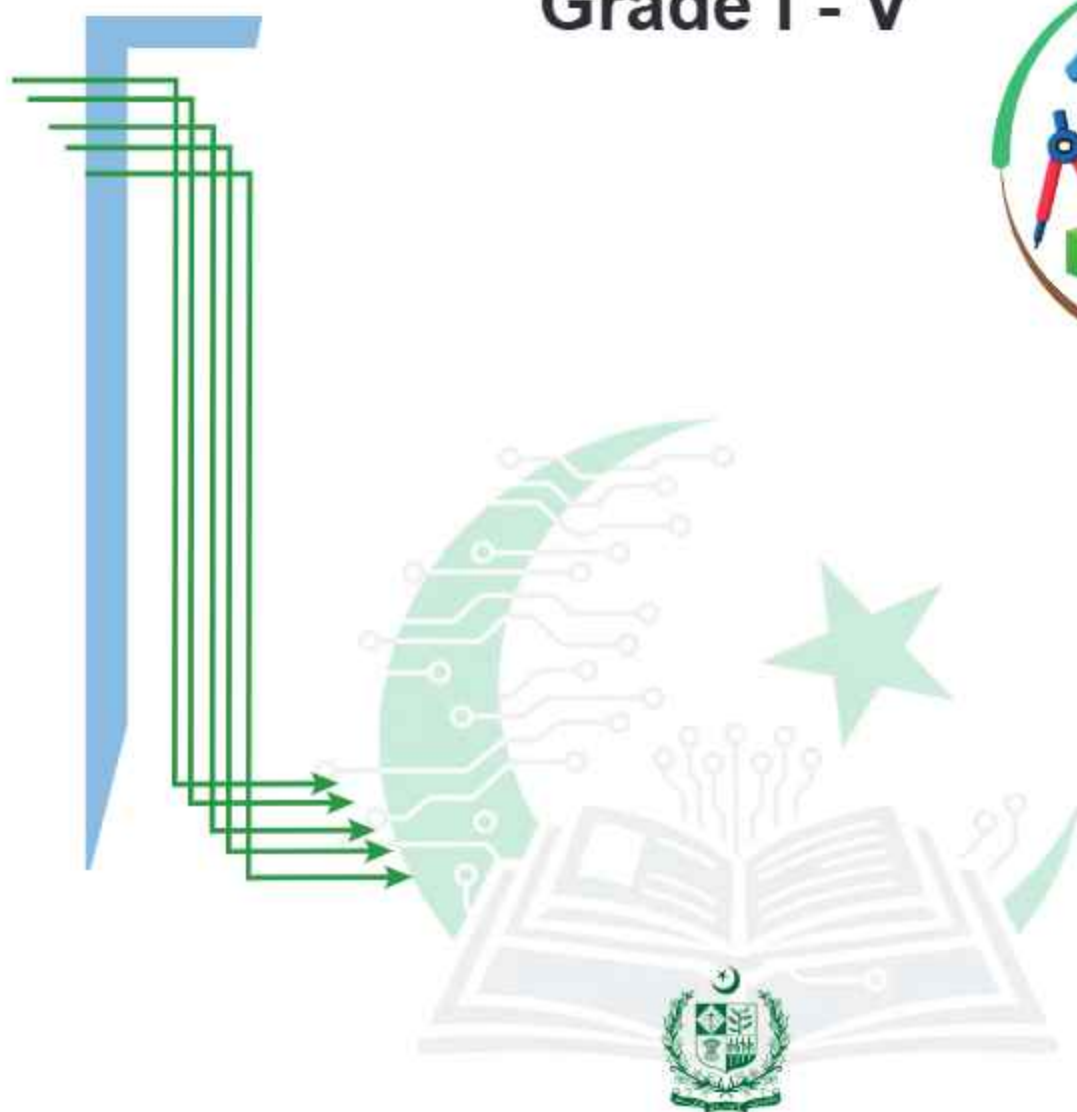


**New National Curriculum of Pakistan 2026
(NNCP)**

MATHEMATICS

Grade I - V



GOVERNMENT OF PAKISTAN
NATIONAL CURRICULUM COUNCIL WING
MINISTRY OF FEDERAL EDUCATION & PROFESSIONAL TRAINING

New National Curriculum of Pakistan 2026
(NNCP)

MATHEMATICS

Grade I - V



NATIONAL CURRICULUM COUNCIL WING
MINISTRY OF FEDERAL EDUCATION AND
PROFESSIONAL TRAINING, ISLAMABAD
GOVERNMENT OF PAKISTAN

ACKNOWLEDGEMENT

The National Curriculum Council Wing, Ministry of Federal Education and Professional Training, presents the New National Curriculum of Pakistan (NNCP) 2026 for Mathematics Grades I–V. This significant initiative reflects our collective commitment to enhancing the quality, relevance, and inclusivity of education in Pakistan. It marks a purposeful shift from content-heavy, procedure-oriented instruction towards conceptual understanding, mathematical reasoning, problem-solving and the practical application of mathematical knowledge. Structured around three interconnected strands—Numbers and Algebra, Measurement and Geometry, and Statistics and Probability—it establishes a progressive learning pathway through clearly defined standards, benchmarks and Student Learning Outcomes (SLOs). Particular emphasis has been placed on the Concrete–Pictorial–Abstract (CPA) approach, mental mathematics, critical thinking and the integration of real-life contexts to make mathematical learning meaningful, engaging and accessible to all learners.

The successful implementation of this curriculum requires a corresponding transformation in classroom practices, instructional resources, teacher preparation, and assessment approaches. Through sustained institutional coordination and stakeholder engagement, the National Curriculum Council Wing remains committed to facilitating a coherent transition from curriculum development to effective classroom implementation, with the ultimate objective of improving learning outcomes and fostering lifelong learning.

The National Curriculum Council Wing extends its sincere gratitude to the valuable guidance and continued support of the leadership of the Ministry of Federal Education and Professional Training, the Technical Committee, and our collaborating institutions, subject specialists, curriculum developers, provincial and regional representatives, practicing teachers, academic experts, and partner institutions whose expertise, dedication, and constructive feedback have been instrumental in shaping this document. It is hoped that this curriculum will serve as meaningful foundation for strengthening mathematical proficiency but also nurture curiosity, confidence, logical reasoning and analytical abilities, enabling our young learners to become independent thinkers, creative problem-solvers and responsible citizens capable of meeting the challenges of an increasingly complex world thereby contributing to a more equitable, progressive, and knowledge-driven Pakistan.

Dr. Tabassum Naz
Director
National Curriculum Council Wing
Ministry of Federal Education and Professional Training
Government of Pakistan

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Chapter 1

VISION AND PURPOSE

1.1 Purpose of the Curriculum

The New National Curriculum of Pakistan (NNCP) 2026 for Mathematics has been developed to provide a coherent, progressive, and internationally benchmarked foundation for mathematical learning. The purpose of the Mathematics Curriculum (I–V) is to enable all learners to:

- Develop confidence and foster interest in Mathematics.
- Build strong number sense, spatial understanding and data literacy through the Concrete–Pictorial–Abstract (CPA) progression.
- Foster logical thinking, problem-solving and the ability to justify solutions.
- Integrate relevant applications including money, time, measurement and data from the school and community.
- Balance conceptual understanding with procedural fluency, ensuring learner's progress from Remember and understanding to applying, analyzing and creating.

1.2 Objectives

The NNCP 2026 Mathematics curriculum is designed to enable learners to:

- Develop conceptual understanding and procedural fluency across Number and Algebra, Measurement and Geometry, and Statistics and Probability.
- Build the ability to reason mathematically, justify solutions, and solve routine and non-routine problems using appropriate strategies.
- Develop fluency in representing and communicating mathematical ideas using concrete materials, pictures, diagrams, symbols and mathematical language.
- Apply Mathematics to real-life, cross-disciplinary and Pakistani socio-economic contexts (money, measurement, data, local currency and units).
- Build confidence, curiosity and a positive disposition towards Mathematics that carries into the secondary stage.

Through the subject, learners are expected to develop:

- **Knowledge:** number systems and operations, place value, patterns and early algebraic relationships, systems of measurement, properties of 2-D and 3-D shapes, and methods of collecting, representing and interpreting data.
- **Skills:** computation and estimation, spatial visualization, logical and quantitative reasoning, data interpretation, and clear mathematical communication using symbols, diagrams and models.
- **Dispositions:** confidence and perseverance when solving unfamiliar problems, curiosity about patterns and relationships, and an appreciation of Mathematics' role in everyday life, other subjects, and the wider economy.

1.3 Guiding Framework

The curriculum framework is based on three interlinked components that together determine how content is sequenced, taught, and assessed.

Curriculum Structure

Curriculum is organized into three strands — Numbers and Algebra; Measurement and Geometry; and Statistics and Probability, each progressing vertically through the grade bands covered by this document. Strand, Standard, and Benchmark statements define the scope of each strand at each stage, and grade-wise SLOs translate those benchmarks into classroom-ready outcomes.

Framework Component	Function
Purpose and Objectives	Define the intended contribution of primary Mathematics to learners' education and development.
Content Strands	Organize mathematical knowledge into Numbers and Algebra, Measurement and Geometry, and Statistics and Probability.
Standards	State broad and enduring expectations for each strand across Grades I–V.
Stage-wise Benchmarks	Specify cumulative achievement by the end of Grades I–II and Grades III–V.
Grade-wise SLOs	Translate Benchmarks into clear, observable and assessable expectations for each grade.
Teaching and Assessment Alignment	Connect the intended content, representation, cognitive demand and application with suitable learning experiences and evidence of achievement.

Concrete–Pictorial–Abstract (CPA) Model

Learning Outcomes are supported by staged CPA activities: learners first manipulate concrete materials, then work with pictorial representations, and finally operate with abstract symbols and procedures. This staged progression supports both the SLO documents and the guidance provided to textbook and learning-material developers.

Mental Mathematics as a Structured Competence

In this curriculum, mental mathematics is a structured competence, not just rapid recall. Students learn explicit strategies and deriving new facts from known ones. These strategies build progressively from early additive reasoning to flexible multiplicative thinking. Learners are expected to choose efficient strategies, estimate to check reasonableness, and explain their thinking. This builds the fluency and confidence that support problem solving and later mathematical learning.

1.4 Bloom's Taxonomy in Mathematics

Bloom's revised taxonomy arranges thinking into six levels, from recalling facts at the base to creating something new at the top. In Mathematics, the lower three levels build fluency and conceptual understanding; the upper three develop reasoning, problem solving and mathematical communication.

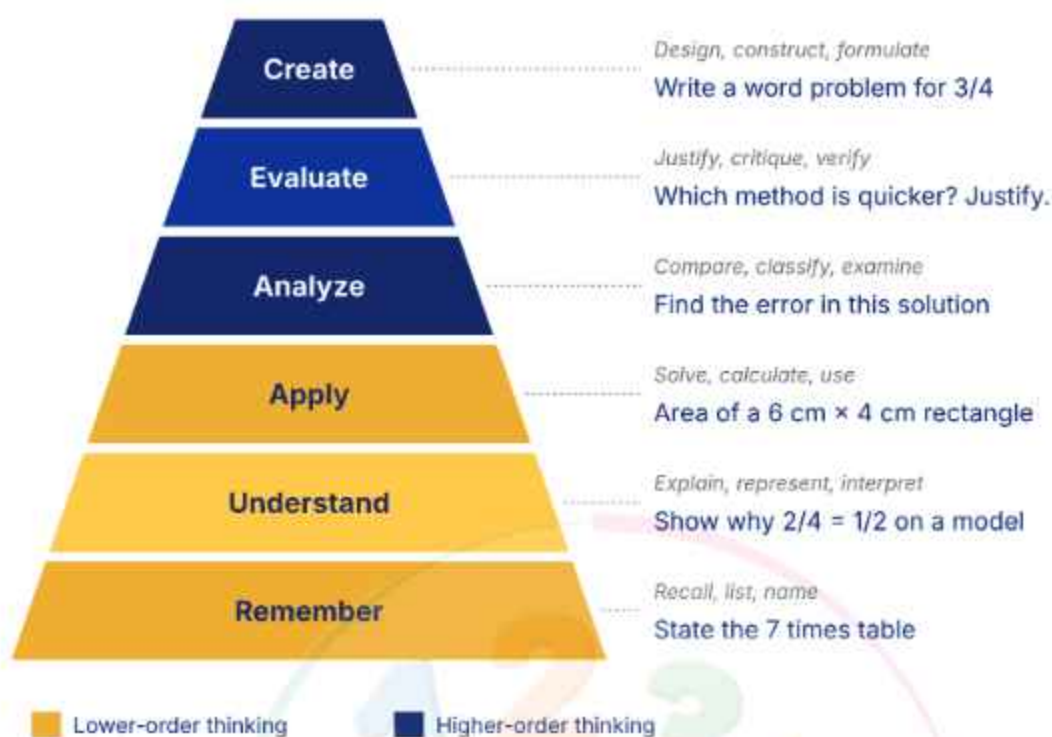


Figure. Bloom's taxonomy levels with sample mathematics tasks

Levels at a Glance

Level	What learners do	Action verbs	Sample mathematics task
Create	Combine ideas to produce something new	<i>Design, construct, formulate, compose, devise</i>	Write your own word problem whose answer is $\frac{3}{4}$ of a quantity.
Evaluate	Judge methods or answers against criteria	<i>Justify, critique, verify, defend, decide</i>	Two pupils add $48 + 37$ differently. Which method is quicker? Justify your choice.
Analyze	Break a problem into parts and see relationships	<i>Compare, classify, examine, distinguish, organize</i>	Find and explain the error in a worked subtraction with regrouping.
Apply	Use a known procedure in a familiar situation	<i>Solve, calculate, use, measure, construct</i>	Find the area of a rectangle 6 cm long and 4 cm wide.
Understand	Explain meaning and show it in different forms	<i>Explain, represent, interpret, illustrate, estimate</i>	Use a fraction strip to show why $\frac{2}{4} = \frac{1}{2}$.
Remember	Recall facts, terms and procedures	<i>Recall, list, name, state, identify</i>	State the 7 times table up to 7×10 .

SLOs are aligned across appropriate levels of Bloom's Taxonomy, from Remember and understanding towards applying, analyzing, creating and evaluating as learners progress, ensuring that assessment can be designed to match the cognitive domain intended by the curriculum rather than defaulting to recall.

Curriculum Teaching and Assessment Alignment

Curriculum implementation should maintain direct alignment from the broad Standard to the stage Benchmark, grade-wise SLO, learning experience and assessment evidence. An assessment task should therefore reflect the SLO's mathematical content, range, representation, context and cognitive demand rather than test an unrelated skill.

Standard → Benchmark → Grade-wise SLO → Learning Experience → Assessment Evidence

1.5 Key Principles

The following principles guide curriculum content, progression, implementation and assessment:

Principle	Curriculum Implication
Coherence and Vertical Progression	Learning develops through explicit prerequisite relationships and increasing depth from Grade I to Grade V.
Developmental Appropriateness	Content, representations and cognitive demand match learners' age, prior experience and readiness.
Conceptual Understanding and Procedural Fluency	Learners understand mathematical relationships and also develop accurate, efficient and flexible methods.
Reasoning and Problem Solving	Explanation, justification, strategy selection and application are integral to learning rather than treated as optional enrichment.
Concrete Pictorial Abstract Progression	Manipulative, models, diagrams and symbols are used purposefully to support conceptual development and abstraction.
Multiple Representations and Communication	Learners interpret and move among objects, pictures, diagrams, tables, graphs, language and notation.
Contextual and National Relevance	Mathematics is connected with Pakistani currency, calendars, measurement, daily decision-making and meaningful local data.
Equity Inclusion and Accessibility	Content and evidence of learning are presented in ways that allow diverse learners to participate without changing the intended mathematical construct.
Alignment and Assessability	Standards, Benchmarks, SLOs, learning experiences and assessment evidence are traceable and mutually consistent.
Instructional Feasibility	Expectations remain teachable within available instructional time, teacher capacity and realistic classroom resources.

1.6 Cross-Cutting Themes

Cross-cutting themes are integrated through mathematical contexts, representations, classroom practices and assessment tasks where they strengthen the intended learning. They do not create additional strands or unrelated content.

Theme	Integration in Mathematics	Contribution to Learning
Values ethics and responsible behavior	Accuracy, honest recording and representation of data, fair sharing, respect for different strategies and responsible correction of errors.	Develops integrity, fairness, accountability and respectful participation.
Financial literacy	Pakistani/international currency, cost, budgeting, saving, giving, comparison and value-for-money decisions.	Connects number and operations with responsible everyday decision-making.
Climate and environmental awareness	Measurement and data contexts involving water, weather, energy, plants, waste or local environmental observations where relevant.	Uses Mathematics to compare evidence, recognize patterns and support responsible use of resources.
Citizenship culture and diversity	Solar and Islamic calendars, local situations, community data and examples representing Pakistan's diverse regions and experiences.	Strengthens relevance, belonging and evidence-informed participation.
Gender equality and inclusion	Balanced examples and roles, equitable access to questioning, manipulative, tools, leadership and mathematical discussion.	Promotes participation, confidence and aspiration for all learners.
Disability inclusion and accessibility	Tactile and visual materials, clear layouts, verbal descriptions and appropriate response modes that preserve the mathematical construct.	Reduces avoidable sensory, language or motor barriers to demonstrating learning.
Socio-emotional development	Pair and group problem-solving, explaining strategies, listening to others, persisting with challenge and using feedback.	Builds confidence, self-regulation, empathy, collaboration and a positive mathematical identity.
Health safety and daily living	Time, distance, quantities, measurement, routines and familiar health or safety information used as meaningful contexts.	Makes mathematical learning purposeful and supports responsible daily choices.

1.7 Summary of International Comparison

To ensure NNCP 2026 Mathematics meets internationally credible standards, the curriculum was benchmarked against UK, Australia, Singapore, Malaysia, India, Sri Lanka, Turkiye

Country codes: UK, Aus, Sing, Malay, India, SriL, Turk (in that order).

1. Number and Place Value

Countries	UK: Y · Aus: Y · Sing: Y · Malay: Y · India: Y · SriL: Y · Turk: Y
Decision	Include — already core to NCP. Common to All 7.
Why	Universal; every system covers it.

2. Algebra integrated into Number (not separate strand)

Countries	UK: Y · Aus: N · Sing: Y · Malay: N · India: Y · SriL: N · Turk: Y (from Gr.6)
Decision	Retain NCP's current integrated approach. Common to 4 of 7 (UK, Singapore, India, Turkiye).
Why	Majority practice; formal algebra deferred to secondary elsewhere too.

3. Measurement + Geometry combined strand

Countries	UK: Linked · Aus: Separate · Sing: Combined · Malay: Combined · India: Separate · SriL: Combined · Turk: Combined
Decision	Keep strands separate; strengthen cross-referencing (e.g. perimeter/area). Common to 4 of 7 (Singapore, Malaysia, Sri Lanka, Turkiye).
Why	Practice is split ~50/50 — not worth restructuring NCP's domains.

4. Volume of 3-D solids by end of primary

Countries	UK: Y (Yr5-6) · Aus: Y (Yr5-6) · Sing: Y (P5) · Malay: Y · India: N · SriL: N · Turk: N
Decision	Add at Grade 5. Common to 4 of 7 (UK, Australia, Singapore, Malaysia).
Why	Closes a known Grade 5 gap; prerequisite for Grade 6 work elsewhere.

5. Coordinate plotting (1st quadrant) at primary

Countries	UK: Y (Yr4) · Aus: Y · Sing: N · Malay: Y · India: N · SriL: N · Turk: N
Decision	Add at Grade 4-5, introductory level only. Common to 3 of 7 (UK, Australia, Malaysia).

Why	Minority practice, but among strong performers; light-touch, low content-load addition.
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6. Money / financial literacy as weighted content

Countries	UK: Y · Aus: Y · Sing: Y · Malay: Y · India: Y · SriL: Y · Turk: Partial
Decision	Retain and strengthen as a weighted thread. Common to 6 of 7.
Why	Near-universal; fits Pakistan's Financial Literacy cross-cutting theme.

7. Central tendency (mean/mode) by upper primary

Countries	UK: Y (Yr6) · Aus: Limited · Sing: Y (P6) · Malay: Y (Yr6) · India: Varies · SriL: N · Turk: Partial
Decision	Retain NCP's existing Grade 5 introduction of mean. Common to 4 of 7, mostly Grade 5/6.
Why	Already aligned with the benchmark group; add median/mode per Template 1.

8. Structured probability as explicit primary strand

Countries	UK: N · Aus: Y · Sing: N · Malay: Y · India: Informal · SriL: Y · Turk: N
Decision	Keep light, language-based treatment only. Common to 3 of 7 (Australia, Malaysia, Sri Lanka).
Why	Minority practice; NCP's current Grade 3+ approach is already proportionate.

9. Discrete Mathematics / Sets as separate strand

Countries	UK: N · Aus: N · Sing: No · Malay: Y · India: N · SriL: Y · Turk: No
Decision	Exclude as a separate strand. Common to 2 of 7 (Malaysia, Sri Lanka).
Why	Rare practice; would add load without a corresponding NCP gap.

10. Reasoning/problem-solving embedded across strands

Countries	UK: Y · Aus: Y · Sing: Y · Malay: Y · India: Y · SriL: Y · Turk: Y
Decision	Retain and reinforce as an embedded process. Common to All 7.
Why	Universal; confirms NCP's existing design intent.

Key Findings

- Data Handling / Statistics is NCP's most underweighted domain — as few as 2 SLOs per grade through Grade 4, versus median, mode, line graphs and structured probability by Grade 5 elsewhere.
- Roman numerals, repeated Temperature SLOs, and fragmented 'word problem' SLOs appear in none of the 7 benchmarked systems — avoidable content load.
- Volume and introductory coordinate geometry have no NCP entry point before Grade 6/8, despite appearing by end-of-primary in UK, Australia, Singapore and Malaysia.
- NCP's integration of Algebra into Number, and its embedding of reasoning/problem-solving, already match majority international practice — no change needed.
- Money is present every year but as a repeated stand-alone topic rather than a weighted, real-world thread, unlike most benchmarked systems.

Recommendations

- Retain NCP's domain structure, integrated Algebra, and embedded reasoning/problem-solving — no structural change needed.
- Strengthen Data Handling by Grade 4; structured probability from Grade 5.
- Cut content absent from all benchmarks (Roman numerals, repeated Temperature and word-problem SLOs) to fund the above without raising total load.
- Reframe Money as a weighted, real-world thread through the Number strand, tied to Pakistan's Financial Literacy theme.

Do not add Discrete Mathematics/Sets as a strand, and keep Probability light — both are minority practices with no corresponding NCP gap

The exercise found **no need for major new content**, the dominant finding was overload rather than absence of content — topics such as Roman numerals, early formal multiplication and division, HCF/LCM, the unitary method, and repeated Temperature and word-problem SLOs are taught earlier, more often, or at greater digit-complexity than any benchmarked system requires.

Accordingly, the recommended changes are reductions and reorganizations rather than additions: Roman numerals, fractions, formal multiplication/division and HCF/LCM are scaled back or deferred; word-problem, money, and measurement-conversion SLOs are consolidated into their parent outcomes instead of repeating every grade; and topics such as perimeter/area, geometric transformations and probability are re-sequenced to match where comparable systems introduce them. A country-by-country comparison of individual content areas confirmed that NCP's existing strand structure already matches the majority approach in most areas.

Chapter 2

STRANDS, STANDARDS AND BENCHMARKS

2.1 Introduction

The curriculum is organized into three interrelated strands: Numbers and Algebra, Measurement and Geometry, and Statistics and Probability. Number and operations support measurement, geometric reasoning and data analysis. Measurement and geometry provide practical contexts for estimation and calculation; and statistics and probability require learners to classify, quantify, represent and interpret information. Familiar contexts such as Pakistani currency, Solar and Islamic calendars, measurement and locally meaningful data connect mathematical learning with learners' daily lives.

Progression is expressed through one broad Standard for each strand and stage-end Benchmarks for Grades I–II and Grades III–V. The Benchmarks consolidate the finalized grade-wise Student Learning Outcomes and show increasing content range, representational complexity, procedural fluency, reasoning and application.

2.2 Content Strands

Strand 1: Numbers and Algebra

Description and Rationale

Numbers and Algebra develop number sense, place-value understanding, computational fluency, pattern recognition and early algebraic reasoning. Learners move from counting, representing and comparing whole numbers to operating with increasingly complex numbers and applying number properties, fractions, decimals and percentages. Money and financial contexts strengthen estimation, decision-making and responsible use of mathematics. The strand provides essential numerical tools for measurement, geometry, data handling and everyday problem-solving.

Sub-strand / Topic Area	Brief Description
Whole Numbers and Numeration	Counting, reading, writing, representing, comparing and ordering whole numbers; place value, classification and rounding.
Patterns and Relationships	Recognizing, extending, describing and creating repeating and number patterns, sequences and rules.
Addition, Subtraction and Estimation	Conceptual models, mental and written computation, estimation and contextual problem-solving.
Multiplication, Division and Order of Operations	Equal groups, multiplication facts, multi-digit operations, remainders and DMAS.
Money and Financial Reasoning	Pakistani currency, cost, budgeting, saving, giving, selected international currencies and value-for-money decisions.
Factors, Multiples, Fractions, Decimals and Percentages	Number properties and fraction representations, relationships, operations and conversions.

Strand 2: Measurement and Geometry

Description and Rationale

Measurement and Geometry develop measurement sense, spatial reasoning and understanding of the physical world. Learners compare and measure attributes, interpret time and calendars, describe position and movement, examine lines and angles, analyze two-dimensional shapes and three-dimensional objects, and apply perimeter, area and symmetry. Practical use of measuring and geometric tools links number concepts with accurate representation, visualization and real-life application.

Sub-strand / Topic Area	Brief Description
Length, Mass and Capacity	Direct comparison and measurement using non-standard and standard units and appropriate abbreviations.
Time and Calendars	Analogue and digital time, elapsed time, unit conversion, daily schedules, and Solar and Islamic calendars.
Position, Direction, Lines and Angles	Spatial language, turns, line relationships, points, rays, segments and angle classification and measurement.
Two-Dimensional Shapes, Three-Dimensional Objects and Symmetry	Identification, properties, classification, nets, reflective symmetry and rotational symmetry.
Perimeter and Area	Meaning, estimation and calculation of perimeter and area using measurement, grids and formulas.

Strand 3: Statistics and Probability

Description and Rationale

Statistics and Probability develop data literacy and introductory probabilistic reasoning. Learners collect and organize information, construct and interpret appropriate displays, compare categories, summarize data and communicate findings. They later identify possible outcomes and use qualitative language to describe likelihood. The strand draws on counting, comparison and measurement and enables learners to use evidence in familiar classroom and real-life contexts.

Sub-strand / Topic Area	Brief Description
Data Collection and Organization	Gathering, classifying and organizing categorical and real-life data using tally marks and Carroll diagrams.
Data Representation	Constructing tally charts, picture graphs and horizontal and vertical bar graphs.
Data Interpretation and Summary	Reading displays, comparing categories and totals, drawing conclusions and calculating arithmetic mean.
Chance and Possible Outcomes	Identifying outcomes of simple experiments and describing likelihood using qualitative chance language.

2.3 Standards and Benchmarks

Standards: Standards state the broad and enduring mathematical learning expected across Grades I–V. They provide direction for curriculum implementation, textbook development, pedagogy and assessment.

Benchmarks: Benchmarks state the cumulative learning expected by the end of each stage and show progression towards the Standards. Level 1 is achieved by the end of Grade II and consolidates learning from Grades I–II. Level 2 is achieved by the end of Grade V and consolidates learning from Grades III–V. Each statement is a stage-end expectation and is broader than the grade-wise SLOs it is derived from.

S1: Numbers and Algebra

Standard SD1: *Learners will develop number sense and algebraic thinking; represent and reason with whole numbers, number properties, fractions, decimals, percentages and patterns; use mental and written strategies to calculate and estimate; and apply mathematical and financial reasoning to solve mathematical and real-life problems.*

Benchmarks	Level 1: Grades I–II	Level 2: Grades III–V
B1: Whole Numbers and Numeration	Recognize zero; read numbers to 1,000 and write number to 100; use place value to compose, decompose, compare and order numbers to 100; use ordinal numbers to 20 th .	Read numbers to 100,000; write, compare and order numbers and use place value to 10,000; use Roman numerals to 20; round numbers to the nearest 10, 100 and 1,000; and apply place-value relationships when multiplying by 10, 100 and 1,000; and classify even and odd numbers.
B2: Patterns and Relationships	Count forward and backward in 2s, 3s and 5s up to 20; recognize, extend, describe and create repeating patterns and simple number patterns.	Identify and apply a rule to extend increasing and decreasing number sequences, and represent pattern rules using tables and charts.
B3: Addition, Subtraction and Estimation	Model and calculate addition and subtraction within 100, with or without regrouping; use mental strategies; and solve familiar number and money problems.	Estimate sums and differences, and apply addition and subtraction in budgeting; use mental strategies; and other real-life situations.
B4: Multiplication, Division and Order of Operations	<i>Not formally introduced at this stage.</i>	Use multiplication facts to 10; multiply up to 3-digit by 2-digit numbers; divide up to 3-digit by 2-digit numbers with or without remainder; and apply DMAS rule in familiar situations.

Benchmarks	Level 1: Grades I–II	Level 2: Grades III–V
B5: Money and Financial Reasoning	Recognize, compare and exchange Pakistani coins and notes, and solve simple money problems to Rs.100.	Exchange coins and notes to Rs.5,000; estimate costs; manage budgets and bills to Rs.10,000; make spending, saving and giving decisions; use selected international currencies; and determine value for money.
B6: Factors, Multiples, Fractions, Decimals and Percentages	<i>Not formally introduced at this stage.</i>	Use multiplication facts to establish number relationships; apply factors, multiples, prime and composite numbers, square and cube numbers, and prime factorization; identify one-half, quarters, thirds and distinguish proper and improper fractions; calculate with fractions; compare, order and calculate with decimals to two places; and convert among fractions, decimals and percentages.

S2: Measurement and Geometry

Standard SD1: *Learners will develop measurement sense and spatial reasoning by comparing and measuring attributes, interpreting time, describing position and movement, analyzing lines, angles, shapes, objects and symmetry, and applying perimeter and area to solve mathematical and real-life problems.*

Benchmarks	Level 1: Grades I–II	Level 2: Grades III–V
B1: Length, Mass and Capacity	Compare and measure length, mass and capacity using non-standard units and the standard units <i>m</i> , <i>cm</i> , <i>kg</i> , <i>g</i> , <i>l</i> and <i>ml</i> .	Select and use established standard units and abbreviations to interpret and record length, mass and capacity.
B2: Time and Calendars	Read time to five-minute intervals; sequence days of the week and months of the year; and locate dates on a calendar.	Use a.m. and p.m. and 12-hour and 24-hour time; sequence Solar and Islamic months; calculate intervals; add and subtract hours and minutes; and convert years into months and weeks into days.
B3: Position, Direction, Lines and Angles	Use positional and directional language and identify straight and curved lines.	Recognize lines and rays; identify horizontal and vertical lines, and parallel and perpendicular lines; and classify, measure and draw acute, right, obtuse, straight and reflex angles; and demonstrate turns.

Benchmarks	Level 1: Grades I–II	Level 2: Grades III–V
B4: Two-Dimensional Shapes, Three-Dimensional Objects and Symmetry	Identify, describe, compare and sort basic 2-D shapes and 3-D objects, and create shape patterns.	Classify triangles; analyze 3-D objects and nets; and determine reflective and rotational symmetry.
B5: Perimeter and Area	<i>Not formally introduced at this stage.</i>	Explain and calculate the perimeter of squares, rectangles and triangles, and calculate their area using grids, estimation and formulas.

S3: Statistics and Probability

Standard SD1: Learners will collect, organize, represent, interpret and summarize data using appropriate displays, and reason about possible outcomes and the likelihood of simple events to make comparisons, draw conclusions and communicate findings.

Benchmarks	Level 1: Grades I–II	Level 2: Grades III–V
B1: Data Collection, Organization, Representation, Interpretation and Summary	<i>Not formally introduced at this stage.</i>	Collect, classify and organize simple categorical and real life data; and represent it using tallycharts, picture graphs, Carroll diagrams and horizontal and vertical bar graphs; calculate arithmetic mean of given data.
B2: Chance and Possible Outcomes	<i>Not formally introduced at this stage.</i>	Identify possible outcomes of simple experiments and describe events as certain, likely, unlikely or impossible.

Chapter 3

PROGRESSION GRID — GRADES I - V

Concept	Grade I	Grade II	Grade III	Grade IV	Grade V
Content Strand: Number and Algebra					
Counting & Number Range	Numbers up to 100 Count objects and quantities up to 100. Recognize zero (0) as a number.	Numbers up to 1000 Count objects and quantities up to 1000.	Numbers up to 10,000 Read numbers up to 10,000.	Numbers up to 100,000 Read numbers up to 100,000.	<i>Not addressed at this grade</i>
Writing Numbers	Writing numbers to 20 Write numbers up to 20. Recognize the place value of numbers up to 20 (tens & ones).	Writing numbers to 100 Write numbers in numerals up to 100 and in words up to 20.	Writing numbers to 1000 Write numbers in numerals up to 1000 and in words up to 100.	Writing numbers to 10,000 Write numbers in numerals up to 10,000 and in words up to 10,000.	<i>Not addressed at this grade</i>
Place Value	Place value to 20 Recognize the place value of digits in a 2-digit number (tens and ones). Compose / decompose / regroup a number up to 20 into tens and ones (e.g., $12 = 1 \text{ ten} + 2 \text{ ones}$).	Place value to 100 Recognize the place value of digits in a 2-digit numbers (tens, and ones).	Place value to 1000 Identify the place value of each digit (thousands, hundreds, tens, ones) in numbers up to 1000.	Place value to 10,000 Identify the place value of digits (ten thousand, thousands, hundreds, tens, and ones) in numbers up to 10,000.	<i>Not addressed at this grade</i>
Comparing & Ordering Numbers	Before, after and between Identify the number that comes before, after and between given numbers up to 20. Comparing and ordering numbers to 20 Compare two numbers up to 20/groups of objects using the	Comparing and ordering numbers to 100 Compare two numbers up to 100 using the terms more than, less than and equal to. Arrange a set of numbers up to 100 in ascending and descending order.	Comparing & ordering numbers to 1000 Compare two numbers up to 1000 using symbols '>', '<' and '='. Arrange numbers up to 1000 in ascending and descending order.	Comparing & ordering numbers to 10,000 <ul style="list-style-type: none"> Compare two numbers up to 10,000 using symbols '>', '<' and '='. Arrange numbers up to 10,000 in ascending and descending order. 	<i>Not addressed at this grade</i>

Concept	Grade I	Grade II	Grade III	Grade IV	Grade V
	terms more than, less than and equal to. Arrange numbers up to 20 in increasing and decreasing order.				
Patterns & Number Sequences	Skip counting in 2s, 3s, 5s Count forward and backward in 2s, 3s and 5s up to 20.	Number patterns Identify and extend simple number patterns involving 2 or 3 repeating elements using colors or numbers.	Number patterns <ul style="list-style-type: none"> Extend given number patterns by using certain rules. Develop and describe number patterns. 	Increasing/decreasing patterns Identify and extend increasing and decreasing number patterns.	Completing number sequences Complete number sequences involving whole numbers, following a given rule. Representing pattern rules Represent pattern rules using tables and charts.
Rounding	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	Rounding to 10/100 Round a whole number to the nearest 10 and 100.	Rounding to nearest 1000 Round whole numbers to the nearest 1000.	<i>Not addressed at this grade</i>
Addition & Subtraction	Representing addition & subtraction stories Represent addition and subtraction number stories using manipulative, ten-frames or drawings. Addition to 20 Add two numbers with a total up to 20 without carrying, using concrete objects and pictures including real-life situations. Subtraction to 20 Subtract a number from another up to 20 without borrowing, using concrete objects and pictures including real-life situations.	Addition to 100 Add two numbers with totals up to 100, with and without carrying including real-life situations. Subtraction to 100 Subtract numbers up to 100 without borrowing including real-life situations.	Addition to 1000 Add numbers up to 1000, with and without carrying including real-life situations. Subtraction to 1000 Subtract numbers up to 1000, with and without borrowing including real-life situations.	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>

Concept	Grade I	Grade II	Grade III	Grade IV	Grade V
Mental Math Strategies	Add and subtract a number using mental math strategies up to 20.	Use mental math's strategies to solve addition and subtraction sums up to 100.	Add and subtract numbers using mental math strategies up to 1000.	Use mental math strategies to multiply numbers.	Use mental math strategies for multiplying and dividing numbers.
Estimating Sums & Differences	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	Estimating sums/differences Estimate the answers to addition and subtraction questions using various approaches.	Estimating sums/differences Estimate the answers to the addition and subtraction questions using various approaches.	<i>Not addressed at this grade</i>
Multiplication	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	Multiplication as repeated addition Represent multiplication as repeated addition for the 2, 3-, 4-, 5- and 10-times tables.	Multiplication Facts Build multiplication facts for 6, 7, 8 and 9. Multiplication 2-digit by 1-digit Multiply a 2-digit number by a 1-digit number including real-life situations.	Multiplying 3-digit by 2-digit Multiply a 3-digit number by a 2-digit number using the standard algorithm including real-life situations. Multiplying by 10/100/1000 Multiply 3-digit numbers by 10, 100 and 1000, recognizing the place-value pattern including real-life situations.
Division	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	Division as Repeated Subtraction Recognize division as repeated subtraction through concrete and pictorial representation. Division 2-digit by 1-digit Divide a 2-digit number by a 1-digit number, with and without remainder including real-life situations.	Dividing up to 3 digits by 2- digits Divide a number up to 3 digits by a number up to 2 digits, with and without remainder including real-life situations.
Order of Operations (DMAS)	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	Order of operations (DMAS) Apply the correct order of operations (Division, Multiplication, Addition, Subtraction — DMAS) to solve mixed calculations.

Concept	Grade I	Grade II	Grade III	Grade IV	Grade V
Money	<p>Recognizing coins and notes Recognize Pakistani coins and currency notes up to Rs.100.</p> <p>Matching coin/note combinations Exchange money for equal value using different combinations of coins and notes up to Rs.100.</p> <p>Adding money to find cost</p> <ul style="list-style-type: none"> Solve money problems involving addition and subtraction of Pakistani currency up to Rs.20. 	<p>Total value of coins/notes Find the total value of a given money up to Rs.100.</p> <p>Comparing money sets Compare two coins/notes to identify which has greater or lesser value.</p> <p>Exchanging equal-value money</p> <ul style="list-style-type: none"> Exchange money for equal value using different combinations of coins and notes up to Rs.100. 	<p>Money problems (addition/subtraction)</p> <ul style="list-style-type: none"> Recognize Pakistani currency notes of Rs.500, Rs.1000, and Rs.5000. Solve real-life problems involving addition and subtraction of money up to Rs.1000. Estimate the total cost of two or three items by rounding prices to the nearest tens. <p>Money</p> <ul style="list-style-type: none"> Recognize Pakistani currency notes of Rs.500, Rs.1000, and Rs.5000. Solve real-life problems involving addition and subtraction of money up to Rs.1000. Estimate the total cost of two or three items by rounding prices to the nearest Tens. 	<p>Money & budgeting</p> <ul style="list-style-type: none"> Use addition and subtraction to manage a simple budget and decide how to spend, save and give money. Set a savings goal and identify ways to reduce unnecessary expenses to achieve it. Solve real-life situations of money up to Rs.10,000, including budgeting and bills. 	<p>International currencies</p> <ul style="list-style-type: none"> Identify major international currencies (Dollar, Riyal, and Euro). Solve money problems involving addition and subtractions of a few selected international currency (Dollar, Riyal, and Euro) including real-life situations. <p>Money: expenses, savings, purchases</p> <ul style="list-style-type: none"> Compare the prices and quantities of products to determine which option provides the best value for money.
Factors & Multiples	Not addressed at this grade	Not addressed at this grade	Not addressed at this grade	<p>Factors</p> <ul style="list-style-type: none"> Find all the factors of a given 2-digit number. <p>Multiples</p> <ul style="list-style-type: none"> List multiples of a given 1-digit number. 	<p>Prime factorization</p> <ul style="list-style-type: none"> Find the prime factors of a given number using a factor tree.
More About Numbers	<p>Ordinal Numbers up to 10</p> <ul style="list-style-type: none"> Use ordinal numbers from 1st to 10th to describe the position of objects. 	<p>Ordinal Numbers up to 20</p> <ul style="list-style-type: none"> Use ordinal numbers from 11th to 20th to describe the position of objects. 	<p>Even & odd numbers</p> <ul style="list-style-type: none"> Recognize even and odd numbers up to 1000. Explain the pattern formed by even and odd numbers on a hundred/thousand grid. <p>Roman Numbers</p> <ul style="list-style-type: none"> Recognize Roman numbers up to 20. 	<p>Prime & composite numbers</p> <ul style="list-style-type: none"> Classify numbers as prime or composite up to 100. 	<p>Square & cube numbers</p> <ul style="list-style-type: none"> Identify square and cube numbers and express them in index form (first 10 digits).
Fractions	Not addressed at this grade	Not addressed at this grade	Fractions (half, thirds, quarters)	Mixed numbers	<p>Equivalent fractions</p> <ul style="list-style-type: none"> Identify equivalent fractions using

Concept	Grade I	Grade II	Grade III	Grade IV	Grade V
			<ul style="list-style-type: none"> Identify and represent fractions (half, one-third, two third, quarter, three quarter) of shapes and quantities. Proper & improper fractions <ul style="list-style-type: none"> Differentiate between proper and improper fractions. Represent proper and improper fractions using models such as fraction strips or shaded shapes. 	<ul style="list-style-type: none"> Identify and represent mixed numbers using models/figures. Addition & subtraction of fractions <ul style="list-style-type: none"> Add and subtract fractions with the same denominator (like fractions). 	fractions models or diagrams. Comparing fractions <ul style="list-style-type: none"> Compare two fractions using symbols: '<', '>' and '='. Operations on fractions <ul style="list-style-type: none"> Add and subtract fractions with unlike denominators including real-life situations. Simplify fractions to lowest form. Multiply and divide like and unlike fractions including real-life situations.
Decimals	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<ul style="list-style-type: none"> Compare and order decimals up to 2 decimal places; round to nearest tenth. Add, subtract, multiply and divide decimals up to 2 decimal places including real-life situations.
Percentage	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<ul style="list-style-type: none"> Explain the concept of percentage including real-life situations. Convert percentages into fractions and decimals and vice versa.

Concept	Grade I	Grade II	Grade III	Grade IV	Grade V
Content Strand: Measurement and Geometry					
Length, Mass and Capacity	<p>Comparing length Compare two or more objects by length using the terms long/short, longer/shorter and tall/short.</p> <p>Comparing mass Compare two or more objects by mass using the terms heavy/light and heavier/lighter.</p> <p>Ordering objects by length/mass Arrange a set of objects in order of length or mass through direct comparison.</p>	<p>Measuring length (non-standard units) Measure the length of objects using non-standard units (e.g., hand spans, paperclips, footsteps).</p> <p>Measuring mass (non-standard units) Measure the mass of objects using non-standard units (e.g., blocks, marbles).</p> <p>Measuring capacity (non-standard units) Measure the capacity of containers using non-standard units (e.g., cups, spoonful).</p> <p>Recording & comparing measurements Record and compare measurements taken using non-standard units.</p>	<p>Standard units & abbreviations Identify standard units of length, mass and capacity (m, cm, kg, g, l, ml) of given objects and their abbreviations.</p> <p>Measuring with standard units Recognize and use the standard units of length, mass and capacity to measure and record the length, mass and capacity of different objects.</p>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>
Telling Time	<p>Telling time to the hour Tell time in the hour on analog and digital clocks.</p>	<p>Time to 5-minute intervals Read and write time to the nearest five minutes on an analog and digital clocks.</p>	<p>Time in a.m./p.m. notation Read and record time using a.m. and p.m. notation.</p>	<p>Time Read and record time in both 12-hour and 24-hour formats.</p>	<i>Not addressed at this grade</i>
Time Calculations	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<p>Adding/subtracting hours Add and subtract time given in hours.</p>	<p>Addition & subtraction of time Add and subtract time given in hours and minutes.</p>	<p>Time intervals Calculate time intervals given a starting and ending time.</p> <p>Conversion (Hours/Minutes/Seconds) Convert hours into minutes and minutes into seconds including real-life situations.</p>
Calendar	<p>Days of the week Name the days of the week in correct sequence (Oral).</p>	<p>Solar & Islamic calendar months Recite the months of the solar and Islamic calendar in order.</p>	<p>Calendar dates Identify days and dates from solar and Islamic calendar.</p>	<p>Calendars Convert years into months and weeks into days.</p>	<i>Not addressed at this grade</i>

Concept	Grade I	Grade II	Grade III	Grade IV	Grade V
	<p>Relating routines to time/days Relate familiar daily routines and activities to specific times and days.</p>				
2-D and 3-D Shapes	<p>Identifying basic 2-D shapes Identify and name (orally) basic 2-D shapes: square, rectangle, circle and triangle.</p> <p>Describing 2-D shape features Describe basic features of 2-D shapes such as number of sides and corners.</p> <p>Sorting 2-D shapes</p> <ul style="list-style-type: none"> Sort 2-D shapes from everyday objects. Identify and extend a repeating pattern of 2-D shapes. 	<p>Identifying basic 3-D shapes Identify and name (orally) basic 3-D shapes: cube, cuboid, cylinder, cone and sphere.</p> <p>Describing 3-D shape features Describe basic features of 3-D shapes such as flat and curved surfaces.</p> <p>Sorting 3-D shapes Identify 2-D shapes as faces of 3-D objects and sort everyday 3-D objects according to their shape.</p>	<p>Comparing 2-D and 3-D objects Compare and sort 2-D and 3-D objects according to their properties.</p> <p>Patterns of Shapes Continue and create patterns of 2-D and 3-D figures involving changes in shape, size or orientation.</p> <p>Geometric patterns on a grid Continue and create geometric patterns on a square grid involving changes in shape, size or orientation.</p>	<p>3-D Figures</p> <ul style="list-style-type: none"> Identify and record the number of edges, faces and vertices of given 3-D objects. Compare and sort different 3-D objects using their edges, faces and vertices (cube, cuboid, pyramid, cylinder, cone sphere). 	<p>3-D objects from nets Identify 3-D objects (cube, cuboid, cone and cylinder) from their nets.</p>
Symmetry	<i>Not addressed at this grade</i>	<i>Not addressed at this grade.</i>	<i>Not addressed at this grade</i>	<p>Lines of symmetry Identify lines of symmetry in 2-D shapes.</p> <p>Drawing symmetric shapes Draw/complete symmetric 2-D shapes.</p> <p>Symmetric figures Complete symmetric 2-D figures on a square grid when one half is given.</p>	<p>Reflective & rotational symmetry Identify lines of reflective symmetry and the order of rotational symmetry in 2-D shapes.</p>
Lines, Angles & Triangles Position & Directions	<p>Describing position</p> <ul style="list-style-type: none"> Describe the position of objects using inside/outside, 	<p>Straight VS curved lines</p> <ul style="list-style-type: none"> Identify and differentiate between straight and curved lines. 	<p>Lines and rays</p> <ul style="list-style-type: none"> Identify and differentiate between lines and rays. <p>Horizontal & vertical lines</p>	<p>Parallel & perpendicular lines</p> <ul style="list-style-type: none"> Identify parallel and perpendicular lines. <p>Angles</p>	<p>Straight & reflex angles</p> <ul style="list-style-type: none"> Identify and classify straight and reflex angles in real-life situations.

Concept	Grade I	Grade II	Grade III	Grade IV	Grade V
	above/below, near/far. Giving/following directions <ul style="list-style-type: none"> Give and follow directions using left/right, forward/backward. 	Drawing lines <ul style="list-style-type: none"> Draw straight line using appropriate tools (ruler). Draw curved line using appropriate tools (freehand). Classifying lines in objects <ul style="list-style-type: none"> Classify everyday objects/pictures according to the type of line used (straight or curved). 	<ul style="list-style-type: none"> Identify horizontal and vertical lines in the environment and in shapes. Quarter/half/three-quarter turns <ul style="list-style-type: none"> Demonstrate quarter, half and three-quarter turns using concrete objects or on a grid. 	<ul style="list-style-type: none"> Classify angles as acute, obtuse or right. Measure angles using a protractor (acute, obtuse or right). 	Measuring/drawing angles <ul style="list-style-type: none"> Measure and draw angles accurately using a protractor and ruler. Triangles <ul style="list-style-type: none"> Identify and describe the types of triangles based on their sides and angles.
Perimeter and Area	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	Concept of perimeter <ul style="list-style-type: none"> Explain the concept of perimeter as the distance around a shape. Calculating perimeter <ul style="list-style-type: none"> Calculate the perimeter of squares, rectangles and triangles by adding side lengths. Measuring sides for perimeter <ul style="list-style-type: none"> Measure the sides of given shapes and calculate their perimeter. 	Calculating perimeter <ul style="list-style-type: none"> Calculate the perimeter of squares, rectangles and triangles. Calculating area (grid) <ul style="list-style-type: none"> Calculate the area of squares and rectangles on a square grid by counting unit squares. Estimating triangle area <ul style="list-style-type: none"> Estimate the area of a triangle on a square grid by combining whole and partial unit squares. 	Perimeter formula <ul style="list-style-type: none"> State and apply the formula for the perimeter of a square, rectangle and triangle including real-life situations. Area formula <ul style="list-style-type: none"> State and apply the formula for the area of a square, rectangle and triangle including real-life situations.
Content Strand: Statistics and Probability					
Data Representation (Graphs & Charts)	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	Collect and organize data <ul style="list-style-type: none"> Collect data by observation, counting or asking questions. Tally charts <ul style="list-style-type: none"> Record and Interpret data using tally marks in a tally chart. Reading picture graphs <ul style="list-style-type: none"> Read and interpret data presented in a picture graph. Constructing picture graphs <ul style="list-style-type: none"> Construct a simple picture graph from collected data. 	Carroll diagrams <ul style="list-style-type: none"> Read and interpret data using a Carroll diagram (two-way classification). Constructing Carroll diagrams <ul style="list-style-type: none"> Construct Carroll diagram. 	Reading bar graphs <ul style="list-style-type: none"> Read and interpret data presented in bar graphs. Constructing bar graphs <ul style="list-style-type: none"> Construct horizontal and vertical bar graphs from real-life data. Average <ul style="list-style-type: none"> Calculate the arithmetic mean of the given data.

Concept	Grade I	Grade II	Grade III	Grade IV	Grade V
Probability	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<i>Not addressed at this grade</i>	<p>Possible outcomes</p> <ul style="list-style-type: none"> Identify all possible outcomes of a simple experiment (e.g., coin toss, dice roll). <p>Chance language</p> <ul style="list-style-type: none"> Describe the chance of an event using everyday language (certain, likely, unlikely, impossible).



Chapter 4

STUDENTS' LEARNING OUTCOMES (SLOs)

SLO CODING SCHEME

M-G1-S1-SD1-B1-01

Subject	Grade	Strand	Standard	Benchmark	SLO #
M (Mathematics)	G1	S1	SD1	B1	01

MATHEMATICS — GRADE 1 Strand: Number and Algebra Unit 1: Whole Numbers		
Content / Topics	Student Learning Outcomes	Suggested Activities
1.1 Counting up to 100	<ul style="list-style-type: none"> M-G1-S1-SD1-B1-01 Count objects and quantities up to 100. (Bloom's: Understand) M-G1-S1-SD1-B1-02 Recognize zero (0) as a number. (Bloom's: Remember) 	<ul style="list-style-type: none"> Count classroom items (buttons, blocks, pencils) into groups of tens and ones. Finger-counting rhymes and local number songs. 100-bead string: touch each bead while counting aloud. https://youtu.be/jMmATUvMEsA
1.2 Writing numerals to 20	<ul style="list-style-type: none"> M-G1-S1-SD1-B1-03 Write numbers up to 20. (Bloom's: Remember) M-G1-S1-SD1-B1-04 Recognize the place value of numbers up to 20 (tens & ones). (Bloom's: Remember) 	<ul style="list-style-type: none"> Match numeral cards (1–20) to their number-word cards in a memory game. Trace numerals 1–20 on sand trays or whiteboards, then write them independently.
1.3 Place Value	<ul style="list-style-type: none"> M-G1-S1-SD1-B1-05 Recognize the place value of digits in a 2-digit number (tens and ones). (Bloom's: Remember) M-G1-S1-SD1-B1-06 Compose / decompose / regroup a number up to 20 into tens and ones (e.g., $12 = 1 \text{ ten} + 2 \text{ ones}$). (Bloom's: Understand) 	<ul style="list-style-type: none"> Find every 2-digit number that can be made with six beads on a tens/ones abacus Match butterflies to flowers by tens-and-ones value

1.4 Before, after and between	<ul style="list-style-type: none"> M-G1-S1-SD1-B1-07 Identify the number that comes before, after and between given numbers up to 20. (Bloom's: Remember) 	<ul style="list-style-type: none"> Pick a number card and use a number fan to show the number that comes before and after it. Fill in missing numbers on a number line strip showing what comes before, after or between.
1.5 Comparing and ordering numbers	<ul style="list-style-type: none"> M-G1-S1-SD1-B1-08 Compare two numbers up to 20/groups of objects using the terms more than, less than and equal to. (Bloom's: Understand) M-G1-S1-SD1-B1-09 Arrange numbers up to 20 in increasing and decreasing order. (Bloom's: Analyze) 	<ul style="list-style-type: none"> Place two groups of same of kind of objects and decide which set has more, less or equal using the correct term. Sort pairs of number cards into 'more than', 'less than' and 'equal to' baskets. Play games using dot cards, picture cards, or numeral cards etc. for numbers comparison and ordering.
1.6 Ordinal numbers (1st to 10th)	<ul style="list-style-type: none"> M-G1-S1-SD1-B1-10 Use ordinal numbers from 1st to 10th to describe the position of objects. (Bloom's: Application) 	<ul style="list-style-type: none"> The Animals' Sports Day work out finishing positions (1st, 2nd, 3rd...) from a set of clues Ordering Cards put a set of cards in order and describe each card's position https://youtu.be/0CWWNzprEQ4
1.7 Skip counting in 2s, 3s, 5s	<ul style="list-style-type: none"> M-G1-S1-SD1-B2-01 Count forward and backward in 2s, 3s and 5s up to 20. (Bloom's: Understand) 	<ul style="list-style-type: none"> Use a 20-bead string to jump forward and backward in 2s, 3s and 5s. Number-line hop: jump in 1s, then 2s on a floor number line. Color the counts of 2, 3 and 5 on a 1–20 grid while chanting the skip-counting sequence.
Key Vocabulary: count, number, numeral, tens, ones, before, after, between, more than, less than, equal to, ascending, descending, skip counting, ordinal.		

Unit 2: Number Operations		
Content / Topics	Student Learning Outcomes	Suggested Activities
2.1 Representing addition/subtraction stories	<ul style="list-style-type: none"> M-G1-S1-SD1-B3-01 Represent addition and subtraction number stories using manipulative, ten-frames or drawings. (Bloom's: Understand) 	<ul style="list-style-type: none"> Use counters and a ten-frame to model a simple addition/subtraction story told by the teacher. Draw pictures to represent addition or subtraction of real-life situation.
2.2 Addition to 20	<ul style="list-style-type: none"> M-G1-S1-SD1-B3-02 Add two numbers with a total up to 20 without carrying, using concrete objects and pictures including real-life situations. 	<ul style="list-style-type: none"> Use number pairs and doubles to add fluently within 20 Act out simple real-life addition stories (sharing fruit or toys) using manipulative.

	(Bloom's: Understand; Application)	<ul style="list-style-type: none"> Move counters along a number track based on dice totals to practice addition facts to 20.
2.3 Subtraction to 20	<ul style="list-style-type: none"> M-G1-S1-SD1-B3-03 Subtract a number from another up to 20 without borrowing, using concrete objects and pictures including real-life situations. (Bloom's: Application) M-G1-S1-SD1-B3-04 Add and subtract a number using mental math strategies (Bloom's: Understand) 	<ul style="list-style-type: none"> Start with a set of objects, physically remove some, and count what is left. Complete part-part-whole diagrams for subtraction facts up to 20. Mentally add and subtract numbers within 20. https://youtu.be/i-ojOPOODO0
Key Vocabulary: add, plus, sum, total, altogether, subtract, minus, difference, take away, left, equals.		

Unit 3: Money		
Content / Topics	Student Learning Outcomes	Suggested Activities
3.1 Recognizing coins and currency notes	<ul style="list-style-type: none"> M-G1-S1-SD1-B5-01 Recognize Pakistani coins and currency notes up to Rs.100. (Bloom's: Remember) 	<ul style="list-style-type: none"> Sort play coins and currency notes by value and match them to real Pakistani currency.
3.2 Matching coin/note combinations	<ul style="list-style-type: none"> M-G1-S1-SD1-B5-02 Exchange money for equal value using different combinations of coins and notes up to Rs.100. (Bloom's: Understand) 	<ul style="list-style-type: none"> Match coin/note picture combinations to their correct corresponding value. Use play coins/notes to make a given amount (e.g., Rs.15) in more than one way.
3.3 Adding money to find cost	<ul style="list-style-type: none"> M-G1-S1-SD1-B5-03 Solve money problems involving addition and subtraction of Pakistani currency up to Rs.20. (Bloom's: Application) 	<ul style="list-style-type: none"> Use play money to 'buy' classroom items priced up to Rs.20 and calculate totals. Add and subtract the prices of two small items shown on price tags to find the total cost.
Key Vocabulary: money, currency, coin, note, rupee, value, price, amount, exchange.		

Strand: Measurement and Geometry		
Unit 4: Length and Mass		
Content / Topics	Student Learning Outcomes	Suggested Activities
4.1 Comparing length	<ul style="list-style-type: none"> M-G1-S2-SD1-B1-01 Compare two or more objects by length using the terms long/short, longer/shorter and tall/short. (Bloom's: Understand) 	<ul style="list-style-type: none"> Compare pairs of classroom objects (pencils, books) by length through direct handling. Line up 4-5 objects from shortest to longest.

4.2 Comparing mass	<ul style="list-style-type: none"> M-G1-S2-SD1-B1-02 Compare two or more objects by mass using the terms heavy/light and heavier/ lighter. (Bloom's: Understand) 	<ul style="list-style-type: none"> Lift pairs of objects to decide which is heavier or lighter. Use a simple balance to compare the mass of two objects.
4.3 Ordering objects by length/mass	<ul style="list-style-type: none"> M-G1-S2-SD1-B1-03 Arrange a set of objects in order of length or mass through direct comparison. (Bloom's: Analyze) 	<ul style="list-style-type: none"> Arrange 3–5 objects and choose the longest/shortest or heaviest/lightest. Arrange classmates' pencil cases or bags in order from lightest to heaviest.
Key Vocabulary: long, short, longer, shorter, tall, heavy, light, heavier, lighter, compare, order.		

Unit 5: Time		
Content / Topics	Student Learning Outcomes	Suggested Activities
5.1 Telling time to the hour	<ul style="list-style-type: none"> M-G1-S2-SD1-B2-01 Tell time in the hour on analog and digital clocks. (Bloom's: Understand) 	<ul style="list-style-type: none"> Build a paper clock face and set it to given o'clock times. Match analog clock pictures showing o'clock times to the correct digital time. https://youtu.be/EIxxnagTo https://youtu.be/5xRoBx7iVGI
5.2 Days of the week	<ul style="list-style-type: none"> M-G1-S2-SD1-B2-02 Name the days of the week in correct sequence (Oral). (Bloom's: Remember) 	<ul style="list-style-type: none"> Sequence and recite the days of the week starting from any day. Tell which day comes before or after a given day.
5.3 Relating routines to time/days	<ul style="list-style-type: none"> M-G1-S2-SD1-B2-03 Relate familiar daily routines and activities to specific times and days. (Bloom's: Understand) 	<ul style="list-style-type: none"> Use everyday time language: morning, afternoon, evening, night. Match daily routine pictures (waking, school, lunch, sleep) to clock times. Share what happens on each day of the school week.
Key Vocabulary: clock, hour, o'clock, analog, digital, day, week, morning, afternoon, evening, today.		

Unit 6: Position and Directions		
Content / Topics	Student Learning Outcomes	Suggested Activities
6.1 Describing position	<ul style="list-style-type: none"> M-G1-S2-SD1-B3-01 Describe the position of objects using inside/outside, above/below, near/far. (Bloom's: Understand) 	<ul style="list-style-type: none"> Give and follow instructions to place objects inside/outside, above/below, near/far. https://youtu.be/5Tf0DLBkkzw Describe the position of objects in a picture using positional words.
6.2 Giving/following directions	<ul style="list-style-type: none"> M-G1-S2-SD1-B3-02 Give and follow directions using left/right, forward/backward. (Bloom's: Understand) 	<ul style="list-style-type: none"> Follow positional/directional clues to find a hidden object. Follow 'left, right, forward, backward' movement instructions in a game. Sing and perform rhymes with positional words.

		<ul style="list-style-type: none"> Simon Says with positional language: 'Put the book above your head.'
Key Vocabulary: inside, outside, above, below, near, far, position, location.		

Unit 7: 2-D Shapes		
Content / Topics	Student Learning Outcomes	Suggested Activities
7.1 Identifying basic 2-D shapes	<ul style="list-style-type: none"> M-G1-S2-SD1-B4-01 Identify and name (orally) basic 2-D shapes: square, rectangle, circle and triangle. (Bloom's: Remember) 	<ul style="list-style-type: none"> Find examples of squares, rectangles, circles and triangles around the classroom/ school. Name the shape shown on a flashcard as quickly as possible.
7.2 Describing shape features	<ul style="list-style-type: none"> M-G1-S2-SD1-B4-02 Describe basic features of 2-D shapes such as number of sides and corners. (Bloom's: Understand) 	<ul style="list-style-type: none"> Count the number of sides and corners of each shape cut-out. Trace around shape cut-outs with a finger and describe what is felt (straight/round edges, corners).
7.3 Sorting 2-D shapes	<ul style="list-style-type: none"> M-G1-S2-SD1-B4-03 Sort 2-D shapes from everyday objects. (Bloom's: Analyze) M-G1-S2-SD1-B4-04 Identify and extend a repeating pattern of 2-D shapes. (Bloom's: Application) 	<ul style="list-style-type: none"> Sort shape cut-outs/objects into labelled shape sets. Create a picture using cut-out 2-D shapes, then list the shapes used.
Key Vocabulary: shape, square, rectangle, circle, triangle, side, corner, straight, round.		

MATHEMATICS — GRADE II		
Strand: Number and Algebra		
Unit 1: Whole Numbers		
Content / Topics	Student Learning Outcomes	Suggested Activities
1.1 Counting up to 1000	<ul style="list-style-type: none"> M-G2-S1-SD1-B1-01 Count numbers up to 1000 in skip counts of 50s and 100s. (Bloom's: Understand) 	<ul style="list-style-type: none"> Build numbers up to 1000 using hundreds, tens and ones base-ten blocks. Count a large collection of objects by grouping into tens and hundreds.
1.2 Writing numbers to 100	<ul style="list-style-type: none"> M-G2-S1-SD1-B1-02 Write numbers in numerals up to 100 and in words up to 20. (Bloom's: Remember) 	<ul style="list-style-type: none"> Build two-digit number cards by using single digit cards. Write numbers up to 20 as the teacher calls them out in words.
1.3 Place value	<ul style="list-style-type: none"> M-G2-S1-SD1-B1-03 Recognize the place value of digits in a 2-digit numbers (tens, and ones). 	<ul style="list-style-type: none"> Represent 2-digit numbers on a place-value chart showing tens and ones. Build and decompose 2-digit numbers using expander card; regroup (10 ones = 1 ten; 10 tens = 1 hundred).

	(Bloom's: Remember; Understand)	<ul style="list-style-type: none"> https://youtu.be/T5Qf0qSSJFI https://youtu.be/m6cxpRXaeSw
1.4 Comparing and ordering numbers to 100	<ul style="list-style-type: none"> M-G2-S1-SD1-B1-04 Compare two numbers up to 100 using the terms more than, less than and equal to. (Bloom's: Understand) M-G2-S1-SD1-B1-05 Arrange a set of numbers up to 100 in ascending and descending order. (Bloom's: Analyze) 	<ul style="list-style-type: none"> Use a 1–100 grid to compare pairs of numbers and state which is greater/ lesser. Each student will choose two numbers cards. Compare them using the terms more than, less than and equal to. Count and write in 10s; identify smallest/largest in a set. Peg number cards onto a string in ascending or descending order. https://youtu.be/78JfHS0mAY https://youtu.be/Qn87cKH7v4
1.5 Ordinal numbers (11th to 20th)	<ul style="list-style-type: none"> M-G2-S1-SD1-B1-06 Use ordinal numbers from 11th to 20th to describe the position of objects. (Bloom's: Application) 	<ul style="list-style-type: none"> Ordering Cards: put a set of cards in order and describe each card's position.
1.6 Patterns	<ul style="list-style-type: none"> M-G2-S1-SD1-B2-01 Identify and extend simple number patterns involving 2 or 3 repeating elements using shapes, colors or numbers. (Bloom's: Remember; Analyze) 	<ul style="list-style-type: none"> Continue and create repeating patterns of 2–3 elements using shapes, colors or numbers. Predict and complete the next term in a given repeating pattern strip. https://youtu.be/GddAGHgH1IM
Key Vocabulary: hundred, place value, ones, tens, hundreds, pattern, repeating, sequence, ascending, descending, ordinal.		

Unit 2: Number Operations		
Content / Topics	Student Learning Outcomes	Suggested Activities
2.1 Addition to 100	<ul style="list-style-type: none"> M-G2-S1-SD1-B3-01 Add two numbers with totals up to 100, with and without carrying including real-life situations. (Bloom's: Understand; Application) 	<ul style="list-style-type: none"> Model carrying using base-ten blocks when adding two 2-digit numbers. Rotate through story-problem cards involving everyday addition situations.
2.2 Subtraction to 100	<ul style="list-style-type: none"> M-G2-S1-SD1-B3-02 Subtract numbers up to 100 without borrowing including real-life situations. 	<ul style="list-style-type: none"> Subtract 1-digit from 1-digit, 1-digit from 2-digit, 2-digit from 2-digit numbers without borrowing using number line.

	(Bloom's: Understand; Application)	<ul style="list-style-type: none"> Solve simple real-life subtraction stories about sharing or giving away items.
2.3 Mental math strategies	<ul style="list-style-type: none"> M-G2-S1-SD1-B3-03 Use mental math's strategies to solve addition and subtraction sums. (Bloom's: Understand) 	<ul style="list-style-type: none"> Practice addition and subtraction facts to 100 through pair/group games. Answer rapid-fire mental addition/subtraction questions using a whiteboard. Use number-line game to solve addition and subtraction facts strategically. https://www.iknowit.com/lessons/b-adding-2-digit-numbers-without-regrouping.html
Key Vocabulary: carrying, regroup, tens, ones, sum, difference, add, subtract.		

Unit 3: Money		
Content / Topics	Student Learning Outcomes	Suggested Activities
3.1 Total value of coins/notes	<ul style="list-style-type: none"> M-G2-S1-SD1-B5-01 Find the total value of a given money up to Rs.100. (Bloom's: Understand) 	<ul style="list-style-type: none"> Use price tags and play money to find the total. Count coins/notes and record the total value. Read price labels displayed on products (whole numbers only).
3.2 Comparing money	<ul style="list-style-type: none"> M-G2-S1-SD1-B5-02 Compare two coins/notes to identify which has greater or lesser value. (Bloom's: Understand) 	<ul style="list-style-type: none"> Compare two collections of play money and decide which has greater value. Compare two envelopes of play money and rank them from least to most.
3.3 Exchanging equal value money	<ul style="list-style-type: none"> M-G2-S1-SD1-B5-03 Exchange money for equal value using different combinations of coins and notes up to Rs.100. (Bloom's: Understand) 	<ul style="list-style-type: none"> Match different coin/note combinations that add up to the same total value. Exchange a Rs.100 note for smaller notes/coins of equal value at a play 'bank' station.
Key Vocabulary: value, total, compare, greater, less, amount, price.		

Strand: Measurement and Geometry		
Unit 4: Length, Mass and Capacity		
Content / Topics	Student Learning Outcomes	Suggested Activities
4.1 Measuring length (non-standard units)	<ul style="list-style-type: none"> M-G2-S2-SD1-B1-01 Measure the length of objects using non-standard units (e.g., hand spans, paperclips, footsteps). (Bloom's: Understand) 	<ul style="list-style-type: none"> Measure the length of desks, books and the classroom door using hand spans or footsteps. Measure the length of small classroom items using a chain of paperclips. https://www.youtube.com/watch?v=LtKG21h0nAY
4.2 Measuring mass (non-standard)	<ul style="list-style-type: none"> M-G2-S2-SD1-B1-02 	<ul style="list-style-type: none"> Balance classroom objects against uniform blocks/marbles to compare mass.

units)	<ul style="list-style-type: none"> Measure the mass of objects using non-standard units (e.g., blocks, marbles). (Bloom's: Understand) 	<ul style="list-style-type: none"> Use marbles as a non-standard unit to find the mass of small objects. https://youtu.be/pEot9b07lnk
4.3 Measuring capacity (non-standard units)	<ul style="list-style-type: none"> M-G2-S2-SD1-B1-03 Measure the capacity of containers using non-standard units (e.g., cups, spoonful). (Bloom's: Understand) 	<ul style="list-style-type: none"> Measure the capacity of containers by counting cupful's or spoonful's of water/sand. Compare how many spoonful's it takes to fill two differently-shaped containers.
4.4 Recording & comparing measurements	<ul style="list-style-type: none"> M-G2-S2-SD1-B1-04 Record and compare measurements taken using non-standard units. (Bloom's: Understand) 	<ul style="list-style-type: none"> Record and compare non-standard measurements in a simple class chart. Build a class table ranking measured objects from smallest to largest reading.
Key Vocabulary: length, mass, capacity, measure, non-standard unit, span, compare.		

Unit 5: Time		
Content / Topics	Student Learning Outcomes	Suggested Activities
5.1 Time to 5-minute intervals	<ul style="list-style-type: none"> M-G2-S2-SD1-B2-01 Read and write time to the nearest five minutes on an analog and digital clocks. (Bloom's: Remember; Understand) 	<ul style="list-style-type: none"> Set and read clock times to the nearest five minutes using a geared teaching clock. Match analog clocks cards showing five-minute times to their digital clock cards.
5.2 Solar & Islamic calendar months	<ul style="list-style-type: none"> M-G2-S2-SD1-B2-02 Recite the months of the solar and Islamic calendar in order. (Bloom's: Remember) 	<ul style="list-style-type: none"> Point to and recite months of the solar calendar in sequence. Recite the months of the Hijri calendar orally using a rhyme or chant. https://youtu.be/ILCRuXriKMU
Key Vocabulary: five-minute intervals, a.m., p.m., month, calendar, solar, Islamic, Hijri.		

Unit 6: Lines		
Content / Topics	Student Learning Outcomes	Suggested Activities
6.1 Straight vs curved lines	<ul style="list-style-type: none"> M-G2-S2-SD1-B3-01 Identify and differentiate between straight and curved lines. (Bloom's: Remember; Understand) 	<ul style="list-style-type: none"> Find and point out examples of straight and curved lines in the classroom. Sort a set of picture cards by whether the lines shown are straight or curved.
6.2 Drawing lines	<ul style="list-style-type: none"> M-G2-S2-SD1-B3-02 Draw straight line using appropriate tools (ruler). (Bloom's: Understand) M-G2-S2-SD1-B3-03 	<ul style="list-style-type: none"> Draw straight lines using a ruler and curved lines freehand. Create a picture using only straight lines, then another using only curved lines.

	Draw curved line using appropriate tools (freehand). (Bloom's: Understand)	
6.3 Classifying lines	<ul style="list-style-type: none"> M-G2-S2-SD1-B3-04 Classify everyday objects/ pictures according to the type of line used (straight or curved). (Bloom's: Analyze) 	<ul style="list-style-type: none"> Sort picture cards of objects into straight-line and curved-line groups. Record classroom objects in a table under 'straight lines' or 'curved lines'.
Key Vocabulary: straight line, curved line, ruler, draw, classify.		

Unit 7: 3-D Shapes		
Content / Topics	Student Learning Outcomes	Suggested Activities
7.1 Identifying basic 3-D shapes	<ul style="list-style-type: none"> M-G2-S2-SD1-B4-01 Identify and name (orally) basic 3-D shapes: cube, cuboid, cylinder, cone and sphere. (Bloom's: Remember) 	<ul style="list-style-type: none"> Find examples of cubes, cuboids, cylinders, cones and spheres around the school (boxes, cans, balls). Reach into a 'mystery bag' and pick one object and identify a 3-D shape.
7.2 Describing 3-D shape features	<ul style="list-style-type: none"> M-G2-S2-SD1-B4-02 Describe basic features of 3-D shapes such as flat and curved surfaces. (Bloom's: Understand) 	<ul style="list-style-type: none"> Sort 3-D objects into 'flat surfaces' and 'curved surfaces' groups. Test which 3-D shapes roll and which stack, and explain why using surface type. https://youtu.be/3nLpD6bE4fE
7.3 Sorting 3-D shapes	<ul style="list-style-type: none"> M-G2-S2-SD1-B4-03 Identify 2D shapes as faces of 3D objects and sort everyday 3-D objects according to their shape. (Bloom's: Analyze) 	<ul style="list-style-type: none"> Sort real objects/models into labelled 3-D shape bins. Construct simple structures using 3-D shape blocks and describe the shapes used.
Key Vocabulary: cube, cuboid, cylinder, cone, sphere, surface, flat, curved.		

MATHEMATICS — GRADE III**Strand: Number and Algebra****Unit 1: Whole Numbers**

Content / Topics	Student Learning Outcomes	Suggested Activities
1.1 Numbers up to 10,000	<ul style="list-style-type: none">• M-G3-S1-SD1-B1-01 Read numbers up to 10,000. (Bloom's: Understand)	<ul style="list-style-type: none">• Represent numbers up to 10,000 using a place value chart or abacus.• Count large collections of straws/counters by bundling into tens, hundreds and thousands.
1.2 Writing numbers to 1000	<ul style="list-style-type: none">• M-G3-S1-SD1-B1-02 Write numbers in numerals up to 1000 and in words up to 100. (Bloom's: Remember)	<ul style="list-style-type: none">• Write numbers up to 100 as the teacher dictates them in words.• Build and decompose 3-digit numbers using expander cards showing hundreds, tens and ones.
1.3 Place value to 1000	<ul style="list-style-type: none">• M-G3-S1-SD1-B1-03 Identify the place value of each digit (thousands, hundreds, tens, ones) in numbers up to 1000. (Bloom's: Remember; Understand)	<ul style="list-style-type: none">• Represent the place value of each digit in a 3-digit number using a place value chart or abacus.• Circle a chosen digit in several numbers and state its place value.
1.4 Comparing & ordering numbers to 1000	<ul style="list-style-type: none">• M-G3-S1-SD1-B1-04 Compare two numbers up to 1000 using symbols '>', '<' and '='. (Bloom's: Understand)• M-G3-S1-SD1-B1-05 Arrange numbers up to 1000 in ascending and descending order. (Bloom's: Analyze)	<ul style="list-style-type: none">• Compare and order numbers up to 1000 using a number grid or number line.• Arrange shuffled number cards up to 1000 in ascending/descending order.• Peg 3-digit number cards onto a string in ascending or descending order.
1.6 Rounding to 10/100	<ul style="list-style-type: none">• M-G3-S1-SD1-B1-06 Round a whole number to the nearest 10 and 100. (Bloom's: Understand)	<ul style="list-style-type: none">• Round given numbers to the nearest 10/100 and match them to the correct rounded value.• Use a number line to decide whether a number rounds up or down to the nearest 10/100.• https://mathantics.com/lesson/rounding
1.6 Even & odd numbers	<ul style="list-style-type: none">• M-G3-S1-SD1-B1-07 Identify even and odd numbers up to 1000. (Bloom's: Remember)• M-G3-S1-SD1-B1-08 Explain the pattern formed by even and odd numbers on a hundred/thousand grid. (Bloom's: Analyze)	<ul style="list-style-type: none">• Group counters into pairs to test whether a number is even or odd.• Sort a mixed set of number cards into even and odd sets and justify each choice.• In teams, race to sort a mixed set of number cards into even and odd baskets.• Color even and odd numbers in different colors on a hundred/thousand square grid and describe the pattern.

		<ul style="list-style-type: none"> In pairs, explain in words why the colored pattern of even/odd numbers looks the way it does.
1.8 Roman numbers	<ul style="list-style-type: none"> M-G3-S1-SD1-B1-09 Recognize Roman numbers up to 20. (Bloom's: Remember) 	<ul style="list-style-type: none"> Use number cards to match numbers with their corresponding Roman numbers and arrange them in a correct sequence. https://mathantics.com/lesson/roman-numerals
1.5 Number patterns	<ul style="list-style-type: none"> M-G3-S1-SD1-B2-01 Extend given number patterns by using certain rules. (Bloom's: Understanding; Analyze) M-G3-S1-SD1-B2-02 Develop and describe number patterns. (Bloom's: Understanding; Analyze) 	<ul style="list-style-type: none"> Trade a completed pattern with a partner to continue each other's pattern.
Key Vocabulary: place value, hundreds, tens, ones, thousand, round, nearest, ascending, descending, even, odd, pair, pattern, pattern orientation, Roman numbers.		

Unit 2: Number Operations		
Content / Topics	Student Learning Outcomes	Suggested Activities
2.1 Addition to 1000	<ul style="list-style-type: none"> M-G3-S1-SD1-B3-01 Add numbers up to 1000, with and without carrying including real-life situations. (Bloom's: Understand; Application) 	<ul style="list-style-type: none"> Model carrying using base-ten blocks for 3-digit numbers. Solve real-life addition problems (shopping lists, pocket money, savings). https://mathantics.com/lesson/multi-digit-addition
2.2 Subtraction to 1000	<ul style="list-style-type: none"> M-G3-S1-SD1-B3-02 Subtract numbers up to 1000, with and without borrowing including real-life situations. (Bloom's: Understand; Application) M-G3-S1-SD1-B3-03 Add and subtract numbers using mental math strategies. (Bloom's: Understand) 	<ul style="list-style-type: none"> Model borrowing using base-ten blocks for 3-digit numbers. Solve mixed subtraction word problem cards drawn from everyday situations. https://mathantics.com/lesson/multi-digit-subtraction
2.3 Estimating sums/differences	<ul style="list-style-type: none"> M-G3-S1-SD1-B3-04 Estimate the answers to addition and subtraction questions using various approaches. (Bloom's: Understand; Evaluate) 	<ul style="list-style-type: none"> Place the numbers on an empty number line to judge roughly where the answer falls. For $389 + 215$, jump from about 400 by about 200 to reach about 600. https://mathantics.com/lesson/number-line

		<ul style="list-style-type: none"> Use only the leading digits, then adjust for the rest. $487 + 326 \rightarrow 400 + 300 = 700$ The remaining parts, $87 + 26$, make about 100. Adjusted estimate: about 800 Change the numbers to nearby values that are easy to combine. $247 + 152 \approx 250 + 150$ $= 400$ (actual 399) $523 - 247 \approx 525 - 250$ $= 275$ (actual 276)
2.4 Multiplication as repeated addition	<ul style="list-style-type: none"> M-G3-S1-SD1-B4-01 Represent multiplication as repeated addition for the 2-, 3-, 4-, 5- and 10-times tables. <i>(Bloom's: Understand)</i> 	<ul style="list-style-type: none"> Build arrays and repeated-addition number sentences for the 2-, 3-, 4-, 5- and 10-times tables. Use skip counting on a number line to model repeated addition for times tables. https://youtu.be/-huQ2P77YTk https://youtu.be/X0ZP6Lvn0A0 https://youtu.be/UfvIlQNIbH4
Key Vocabulary: carry, borrow, regroup, repeated addition, array, times table, successive subtraction, division, remainder, total, change, amount, add, subtract, budget, rupee.		

Unit 3: Money		
Content / Topics	Student Learning Outcomes	Suggested Activities
3.1 Money	<ul style="list-style-type: none"> M-G3-S1-SD1-B5-01 Recognize Pakistani currency notes of Rs.500, Rs.1000, and Rs.5000. <i>(Bloom's: Remember)</i> M-G3-S1-SD1-B5-02 Solve real-life problems involving addition and subtraction of money up to Rs.1000. <i>(Bloom's: Application)</i> M-G3-S1-SD1-B5-03 Estimate the total cost of two or three items by rounding prices to the nearest Tens. <i>(Bloom's: Understand; Evaluate)</i> 	<ul style="list-style-type: none"> Total a set of purchases and calculate the change from a given amount up to Rs.1000. Plan a small shopping list within a set budget and check the total amount and estimate against the budget. https://youtu.be/ndGb6MJ47Vg
Key Vocabulary: Currency, notes, money, price, change, amount, cost, rupee.		

Unit 4: Fractions

Content / Topics	Student Learning Outcomes	Suggested Activities
4.1 Fractions (half, thirds, quarters)	<ul style="list-style-type: none"> M-G3-S1-SD1-B6-01 Identify and represent fractions (half, one-third, two third, quarter, three quarter) of shapes and quantities. (<i>Bloom's: Remember; Understand</i>) 	<ul style="list-style-type: none"> https://mathantics.com/lesson/what-are-fractions https://mathantics.com/lesson/fractions-are-parts Fold paper strips into halves, thirds and quarters and label each part. Shade fractions of given shapes (half, one-third, two third, quarter, three quarter) and quantities of objects. https://youtu.be/i42H4f5vXDw
4.2 Proper & improper fractions	<ul style="list-style-type: none"> M-G3-S1-SD1-B6-02 Differentiate between proper and improper fractions. (<i>Bloom's: Understand</i>) M-G3-S1-SD1-B6-03 Represent proper and improper fractions using models such as fraction strips or shaded shapes. (<i>Bloom's: Application</i>) 	<ul style="list-style-type: none"> https://mathantics.com/lesson/working-with-parts Sort fraction cards into proper and improper sets and explain the difference using models. Play a matching game pairing fraction pictures with proper/improper labels. Fold paper strips to model given proper and improper fractions. Draw and shade shapes to represent given proper and improper fractions.
Key Vocabulary: fraction, half, third, quarter, unit fraction, numerator, denominator, proper fraction, improper fraction.		

Strand: Measurement and Geometry

Unit 5: Length, Mass and Capacity

Content / Topics	Student Learning Outcomes	Suggested Activities
5.1 Standard units & abbreviations	<ul style="list-style-type: none"> M-G3-S2-SD1-B1-01 Identify standard units of length, mass and capacity (<i>m, cm, kg, g, l, ml</i>) of given objects and their abbreviations. (<i>Bloom's: Understand</i>) 	<ul style="list-style-type: none"> Match objects/quantities to the most appropriate standard unit and its abbreviation. Match unit names to their correct abbreviations in a quick-fire game.
5.2 Measuring with standard units	<ul style="list-style-type: none"> M-G3-S2-SD1-B1-02 Recognize and use the standard units of length, mass and capacity to measure and record the length, mass and capacity of different objects. (<i>Bloom's: Understand</i>) 	<ul style="list-style-type: none"> Measure classroom objects using rulers/meter sticks and record results in meters and centimeters. Weigh objects on a scale and measure liquid capacity using measuring jugs, recording results. https://mathantics.com/lesson/intro-to-the-metric-system

Key Vocabulary: meter (*m*), centimeter (*cm*), kilogram (*kg*), gram (*g*), litre (*l*), millilitre (*ml*), standard unit, abbreviation.

Unit 6: Time		
Content / Topics	Student Learning Outcomes	Suggested Activities
6.1 a.m./p.m. notation	<ul style="list-style-type: none"> M-G3-S2-SD1-B2-01 Read and record time using a.m. and p.m. notation. (Bloom's: Understand) 	<ul style="list-style-type: none"> Sort daily activities into a.m. and p.m. and record them with correct notation. Write out a personal daily schedule using correct a.m./p.m. notation. https://mathantics.com/lesson/telling-time
6.2 Adding/ subtracting hours	<ul style="list-style-type: none"> M-G3-S2-SD1-B2-02 Add and subtract time given in hours. (Bloom's: Understand) 	<ul style="list-style-type: none"> Solve word problems that involve adding or subtracting hours (journey/class durations). Move clock hands forward/ backward a given number of hours and read the new time.
6.3 Calendar dates	<ul style="list-style-type: none"> M-G3-S2-SD1-B2-03 Identify days and dates from solar and Islamic calendar. (Bloom's: Understand) 	<ul style="list-style-type: none"> Find and state the day and date of given events on a solar calendar. Match given Islamic calendar dates to corresponding solar calendar dates using a reference chart.

Key Vocabulary: a.m., p.m., calendar, date, elapsed time, add, subtract, hour.

Unit 7: Lines and Directions		
Content / Topics	Student Learning Outcomes	Suggested Activities
7.1 Lines and rays	<ul style="list-style-type: none"> M-G3-S2-SD1-B3-01 Identify and differentiate between lines and rays. (Bloom's: Remember; Understand) 	<ul style="list-style-type: none"> Represent lines and rays on a geo-board or dot-grid paper. Label given diagrams correctly as line and ray.
7.2 Horizontal & vertical lines	<ul style="list-style-type: none"> M-G3-S2-SD1-B3-02 Identify horizontal and vertical lines in the environment and in shapes. (Bloom's: Remember) 	<ul style="list-style-type: none"> Find and record examples of horizontal and vertical lines around the classroom. Sort picture cards of objects/structures into horizontal-line and vertical-line groups.
7.3 Quarter/half/three-quarter turns	<ul style="list-style-type: none"> M-G3-S2-SD1-B3-03 Demonstrate quarter, half and three-quarter turns using concrete objects or on a grid. (Bloom's: Understand) 	<ul style="list-style-type: none"> Follow instructions to make quarter, half and three-quarter turns using the body or an object on a grid. Spin a pointer on a grid and describe the turn made in quarter/half/three-quarter terms.

Key Vocabulary: point, line, ray, line segment, horizontal, vertical, quarter turn, half turn, three-quarter turn.

Unit 8: 2-D and 3-D Shapes		
Content / Topics	Student Learning Outcomes	Suggested Activities
8.1 Comparing 2-D & 3-D objects	<ul style="list-style-type: none"> M-G3-S2-SD1-B4-01 Compare and sort 2-D and 3-D objects according to their properties. (Bloom's: Analyze) 	<ul style="list-style-type: none"> Compare and sort 2-D and 3-D objects into a table by number of faces, edges and vertices. Given three 2-D and 3-D objects, identify which one doesn't share a property with the other two.
8.2 Patterns of shapes	<ul style="list-style-type: none"> M-G3-S2-SD1-B4-02 Continue and create patterns of 2-D and 3-D figures involving changes in shape, size or orientation. (Bloom's: Analyze, Create) 	<ul style="list-style-type: none"> Continue and design patterns on square-grid paper, varying shape, size and orientation. Trade a completed grid pattern with a partner to continue each other's pattern. https://www.youtube.com/watch?v=dx64Y Zbktuo
Key Vocabulary: symmetry, line of symmetry, symmetric, compare, sort, properties, faces, edges, vertices.		

Unit 9: Perimeter		
Content / Topics	Student Learning Outcomes	Suggested Activities
9.1 Concept of perimeter	<ul style="list-style-type: none"> M-G3-S2-SD1-B5-01 Explain the concept of perimeter as the distance around a shape. (Bloom's: Understand) 	<ul style="list-style-type: none"> Use string to trace around the edge of a shape, then measure the string to find the perimeter. Walk around the edge of a marked shape on the floor, counting steps to sense perimeter.
9.2 Calculating perimeter	<ul style="list-style-type: none"> M-G3-S2-SD1-B5-02 Calculate the perimeter of squares, rectangles and triangles by adding side lengths. (Bloom's: Understand) 	<ul style="list-style-type: none"> Calculate the perimeter of squares, rectangles and triangles given their side lengths. Find the missing side length when the perimeter and other sides are given.
9.3 Measuring sides for perimeter	<ul style="list-style-type: none"> M-G3-S2-SD1-B5-03 Measure the sides of given shapes and calculate their perimeter. (Bloom's: Understand) 	<ul style="list-style-type: none"> Measure and calculate the perimeter of real objects/spaces (desks, books, playground markings). Measure and calculate the perimeter needed to frame a picture or poster.
Key Vocabulary: perimeter, side, distance, square, rectangle, triangle, measure.		

Strand: Statistics and Probability**Unit 10: Statistics**

Content / Topics	Student Learning Outcomes	Suggested Activities
10.1 Collect and organize data	<ul style="list-style-type: none">• M-G3-S3-SD1-B1-01 Collect data by observation, counting or asking questions. (Bloom's: Application)	<ul style="list-style-type: none">• Collect real class data and organize it.
10.2 Tally charts	<ul style="list-style-type: none">• M-G3-S3-SD1-B1-02 Record and Interpret data using tally marks in a tally chart. (Bloom's: Understanding, Analyze)	<ul style="list-style-type: none">• Conduct a class survey and record results using tally marks.• Convert a completed tally chart into a simple frequency table.• https://www.youtube.com/watch?v=GBBLGB15UkM
10.3 Reading picture graphs	<ul style="list-style-type: none">• M-G3-S3-SD1-B1-03 Read and interpret data presented in a picture graph. (Bloom's: Understand, Analyze)	<ul style="list-style-type: none">• Answer questions about a given picture graph (most/least popular, totals, differences).• Set and answer three questions about a displayed class picture graph.• https://youtu.be/Yi7rDyIXwW0
10.4 Constructing picture graphs	<ul style="list-style-type: none">• M-G3-S3-SD1-B1-04 Construct a simple picture graph from collected data. (Bloom's: Analyze; Create)	<ul style="list-style-type: none">• Conduct a simple class survey (favorite fruit, pet, sport) and construct a picture graph of the results.• Display completed picture graphs around the room and compare results in pairs.• https://youtu.be/_H0M0XzjmIA
Key Vocabulary: Classify, sort, picture graph, data, survey, interpret.		

MATHEMATICS GRADE IV**Strand: Number and Algebra****Unit 1: Whole Numbers**

Content / Topics	Student Learning Outcomes	Suggested Activities
1.1 Numbers up to 100,000	<ul style="list-style-type: none">M-G4-S1-SD1-B1-01 Read numbers up to 100,000 (Bloom's: Understand)	<ul style="list-style-type: none">Read large quantities using bundles of ten-thousands, thousands, hundreds, tens, and ones with base-ten materials/pictures.Place 10 cards, each labelled 100,000 and combine to show 1 million.
1.2 Writing numbers to 10,000	<ul style="list-style-type: none">M-G4-S1-SD1-B1-02 Write numbers in numerals up to 10,000 and in words up to 10,000. (Bloom's: Remember)	<ul style="list-style-type: none">Write numbers up to 10,000 as the teacher dictates them in words.Match numeral cards up to 10,000 to their correctly written number cards in words.
1.3 Place value to 10,000	<ul style="list-style-type: none">M-G4-S1-SD1-B1-03 Identify the place value of digits (ten thousand, thousands, hundreds, tens, and ones) in numbers up to 10,000. (Bloom's: Remember; Understand)	<ul style="list-style-type: none">Build and decompose numbers using place value expander cards (ten thousands to ones).Circle a chosen digit in several large numbers and state its place value.https://mathantics.com/lesson/place-value
1.4 Comparing & ordering numbers to 10,000	<ul style="list-style-type: none">M-G4-S1-SD1-B1-04 Compare two numbers up to 10,000 using symbols '>', '<', and '='. (Bloom's: Understand)M-G4-S1-SD1-B1-05 Arrange numbers up to 10,000 in ascending and descending order. (Bloom's: Analyze)	<ul style="list-style-type: none">Compare and order numbers up to 10,000 using a number grid or number line.Arrange shuffled number cards up to 4-digits in ascending/descending order.
1.5 Rounding to nearest 1000	<ul style="list-style-type: none">M-G4-S1-SD1-B1-06 Round whole numbers to the nearest 1000. (Bloom's: Understand)	<ul style="list-style-type: none">Round given numbers to the nearest 1000 using number-line jumps.Run to the nearest 1000 to round a set of numbers in teams.
1.6 Increasing/decreasing patterns	<ul style="list-style-type: none">M-G4-S1-SD1-B2-01 Identify and extend increasing and decreasing number patterns. (Bloom's: Remember; Analyze)	<ul style="list-style-type: none">Complete tables of increasing and decreasing number patterns and describe the rule.Given a sequence, identify the rule and predict the next three terms.
Key Vocabulary: thousand, ten thousand, place value, increasing, decreasing, pattern, round, nearest.		

Unit 2: Number Operations		
Content / Topics	Student Learning Outcomes	Suggested Activities
2.1 Estimating sums/differences	<ul style="list-style-type: none"> M-G4-S1-SD1-B3-01 Estimate the answers to the addition and subtraction questions using various approaches. (Bloom's: Understand; Evaluate) 	<ul style="list-style-type: none"> Round figures to estimate a total before calculating exactly, then compare. Use estimation to check whether a calculated answer is reasonable.
2.2 Multiplication facts	<ul style="list-style-type: none"> M-G4-S1-SD1-B4-01 Build multiplication facts for 6, 7, 8 and 9. (Bloom's: Remember) 	<ul style="list-style-type: none"> Practice the 6–9 tables through chants, card games and quick-fire drills. Use concrete and pictorial representation to tell multiplication of any two numbers can be done in any order. Complete a blank multiplication grid for the 6–9 tables in a timed challenge. https://mathantics.com/lesson/basic-division
2.3 Multiplication	<ul style="list-style-type: none"> M-G4-S1-SD1-B4-02 Multiply a 2-digit number by a 1-digit number including real-life situations. (Bloom's: Understand; Application) M-G4-S1-SD1-B4-03 Use mental math strategies to multiply numbers. (Bloom's: Understand) 	<ul style="list-style-type: none"> Use the grid method to multiply a 2-digit number by a 1-digit number. Solve real-life problems finding the total cost of several identical items. Round and adjust: $19 \times 6 = (20 \times 6) - 6 = 114$ $99 \times 7 = 700 - 7 = 693$ Halving and doubling: $16 \times 5 = 8 \times 10 = 80$. Halving one number and doubling the other leaves the product unchanged.
2.4 Division	<ul style="list-style-type: none"> M-G4-S1-SD1-B4-04 Recognize division as repeated subtraction through concrete and pictorial representation. (Bloom's: Remember) M-G4-S1-SD1-B4-05 Divide a 2-digit number by a 1-digit number, with and without remainder including real-life situations. (Bloom's: Understand; Application) 	<ul style="list-style-type: none"> https://mathantics.com/lesson/basic-division Model division of 2-digit numbers by a 1-digit number using grouping/sharing with counters, including remainders. Solve real-life situations of sharing/grouping involving remainders. https://youtu.be/DM3z_JOeALM https://youtu.be/yy88TpH245k https://youtu.be/lARANhKShRY https://youtu.be/QI6x0KNxiCs
Key Vocabulary: multiply, product, times table, divide, quotient, remainder.		

Unit 3: Money		
Content / Topics	Student Learning Outcomes	Suggested Activities
3.1 Money & budgeting	<ul style="list-style-type: none"> M-G4-S1-SD1-B5-01 Use addition and subtraction to manage a simple budget and decide how to spend, save and give money. <i>(Bloom's: Application; Evaluate)</i> M-G4-S1-SD1-B5-02 Set a savings goal and identify ways to reduce unnecessary expenses to achieve it. <i>(Bloom's: Application; Evaluate; Create)</i> M-G4-S1-SD1-B5-03 Solve real-life situations of money up to Rs.10,000, including budgeting and bills. <i>(Bloom's: Application)</i> 	<ul style="list-style-type: none"> Communicate and share shopping experiences in the class. Work in groups using play money to add, subtract and make changes during shopping activities. Create scenarios involving shopping using data from super market advertisement for other group to solve. Calculate totals and balances from sample household bills/receipts. Budget for a family outing within a set amount, adding and subtracting costs.

Key Vocabulary: total, balance, budget, bill, receipt, amount, expense, saving.

Unit 4: Factors and Multiples		
Content / Topics	Student Learning Outcomes	Suggested Activities
4.1 Factors	<ul style="list-style-type: none"> M-G4-S1-SD1-B6-01 Find all the factors of a given 2-digit number. <i>(Bloom's: Understand)</i> 	<ul style="list-style-type: none"> Find and arrange factor pairs of a 2-digit number using a factor tree diagram. List all factors of a given 2-digit number using arrays. https://mathantics.com/lesson/factoring
4.2 Multiples	<ul style="list-style-type: none"> M-G4-S1-SD1-B6-02 List multiples of a given 1-digit number. <i>(Bloom's: Remember)</i> 	<ul style="list-style-type: none"> Build chains of multiples for given 1-digit numbers. Play bingo where called numbers must be identified as multiples of a target number.
4.3 Prime & composite numbers	<ul style="list-style-type: none"> M-G4-S1-SD1-B6-03 Classify numbers as prime or composite up to 100. <i>(Bloom's: Analyze)</i> 	<ul style="list-style-type: none"> Use a hundred grid (sieve-style activity) to identify and color prime numbers up to 100. Sort number cards up to 100 into prime and composite numbers, justifying each choice.

Key Vocabulary: factor, factor pair, multiple, prime number, composite number.

Unit 5: Fractions		
Content / Topics	Student Learning Outcomes	Suggested Activities
5.1 Mixed numbers	<ul style="list-style-type: none"> M-G4-S1-SD1-B6-04 Identify and represent mixed numbers using models/figures/number line. 	<ul style="list-style-type: none"> https://mathantics.com/lesson/types-of-fractions Draw and represent mixed numbers using fraction strips.

	(Bloom's: Remember; Understand)	<ul style="list-style-type: none"> https://mathantics.com/lesson/intro-to-mixed-numbers Use pizza/cake cut-outs to physically build given mixed numbers. https://mathantics.com/lesson/fractions-on-the-number-line
5.2 Addition & subtraction of fractions	<ul style="list-style-type: none"> M-G4-S1-SD1-B6-05 Add and subtract fractions with the same denominator (like fractions). (Bloom's: Understand) M-G4-S1-SD1-B6-06 Add and subtract mixed numbers. (Bloom's: Understand) 	<ul style="list-style-type: none"> https://mathantics.com/lesson/working-with-parts Add and subtract like fractions using pizza/cake or bar models. Add/subtract like fractions by jumping along a fraction number line. https://mathantics.com/lesson/adding-and-subtracting-fractions https://mathantics.com/lesson/adding-mixed-numbers https://mathantics.com/lesson/subtracting-mixed-numbers
Key Vocabulary: mixed number, whole number, equivalent fraction, like fractions, numerator, denominator.		

Strand: Measurement and Geometry		
Unit 6: Time		
Content / Topics	Student Learning Outcomes	Suggested Activities
6.1 Time	<ul style="list-style-type: none"> M-G4-S2-SD1-B2-01 Read and record time in both 12-hour and 24-hour formats. (Bloom's: Understand) 	<ul style="list-style-type: none"> Read time using sample train/flight timetables. Convert given 12-hour times to 24-hour format and vice versa.
6.2 Addition & subtraction of time	<ul style="list-style-type: none"> M-G4-S2-SD1-B2-02 Add and subtract time given in hours and minutes. (Bloom's: Understand) 	<ul style="list-style-type: none"> Solve real life situations involving addition or subtraction of hours and minutes. Calculate arrival time, departure time and journey duration in real life situations.
6.3 Calendars	<ul style="list-style-type: none"> M-G4-S2-SD1-B2-03 Convert years into months and weeks into days. (Bloom's: Understand) 	<ul style="list-style-type: none"> Complete a conversion table changing years to months and weeks to days. Answer quick-fire cards converting between years, months, weeks and days.
Key Vocabulary: 12-hour format, 24-hour format, convert, elapsed time, hour, minute, year, month, week, day.		

Unit 7: Lines and Angles		
Content / Topics	Student Learning Outcomes	Suggested Activities
7.1 Parallel & perpendicular lines	<ul style="list-style-type: none"> M-G4-S2-SD1-B3-01 Identify parallel and perpendicular lines. (Bloom's: Remember) 	<ul style="list-style-type: none"> Find and record examples of parallel and perpendicular lines in shapes and environment (window frames, road markings).

		<ul style="list-style-type: none"> Sort picture cards of structures by whether they show parallel or perpendicular lines.
7.2 Angles	<ul style="list-style-type: none"> M-G4-S2-SD1-B3-02 Classify angles as acute, obtuse or right. (Bloom's: Analyze) M-G4-S2-SD1-B3-03 Measure angles using a protractor (acute, obtuse or right). (Bloom's: Understand) 	<ul style="list-style-type: none"> Sort angle cards into acute, obtuse and right-angle groups. Find and classify angles seen in classroom objects/furniture. Measure angles in given shapes and diagrams using a protractor. https://mathantics.com/lesson/angle-basics

Key Vocabulary: parallel, perpendicular, angle, acute, obtuse, right angle, protractor.

Unit 8: 2-D and 3-D Shapes		
Content / Topics	Student Learning Outcomes	Suggested Activities
8.1 Lines of symmetry	<ul style="list-style-type: none"> M-G4-S2-SD1-B4-01 Recognize symmetric shapes. (Bloom's: Remember) M-G4-S2-SD1-B4-02 Identify lines of symmetry in 2-D shapes. (Bloom's: Remember) 	<ul style="list-style-type: none"> Find symmetric objects in the classroom or school (doors, windows, the board, leaves, logos), sketch them, and mark the lines of symmetry. Place a small mirror on a shape or picture, if the reflection completes the shape exactly, the mirror is on a line of symmetry. Drop paint on one half of a sheet, fold it, press and open. The fold is the line of symmetry.
8.2 Drawing symmetric shapes	<ul style="list-style-type: none"> M-G4-S2-SD1-B4-03 Draw/complete symmetric 2-D shapes. (Bloom's: Create) 	<ul style="list-style-type: none"> Complete a symmetric shape on grid paper given one half. Create a symmetrical picture by drawing one half and reflecting it onto the other.
8.3 Symmetric figures	<ul style="list-style-type: none"> M-G4-S2-SD1-B4-04 Complete symmetric 2-D figures on a square grid when one half is given. (Bloom's: Understand) 	<ul style="list-style-type: none"> Complete symmetric 2-D figures on square-grid paper when one half is given. Draw one half of a shape and have a partner complete the symmetric other half. https://mathantics.com/lesson/symmetry
8.4 3-D figures	<ul style="list-style-type: none"> M-G4-S2-SD1-B4-05 Identify and record the number of edges, faces and vertices of given 3-D objects. (Bloom's: Understand) M-G4-S2-SD1-B4-06 Compare and sort different 3-D objects using their edges, faces and vertices (cube, cuboid, pyramid, cylinder, cone sphere). (Bloom's: Analyze) 	<ul style="list-style-type: none"> Investigate and record the number of edges, faces and vertices of everyday 3-D objects. Build 3-D shapes with construction kits and count/record their edges, faces and vertices. Use a table to compare the properties of two or more 3-D objects. Identify which of three 3-D objects doesn't share a given property with the others.

Key Vocabulary: triangle, equilateral, isosceles, scalene, symmetry, symmetric, edge, face, vertex, vertices.

Unit 9: Perimeter and Area

Content / Topics	Student Learning Outcomes	Suggested Activities
9.1 Calculating perimeter	<ul style="list-style-type: none"> M-G4-S2-SD1-B5-01 Calculate the perimeter of squares, rectangles and triangles. (Bloom's: Understand) 	<ul style="list-style-type: none"> Measure and record the perimeter of several shapes in a comparison table. Find a missing side length when perimeter and other sides are given. https://mathantics.com/lesson/perimeter
9.2 Calculating area (grid)	<ul style="list-style-type: none"> M-G4-S2-SD1-B5-02 Calculate the area of squares and rectangles on a square grid by counting unit squares. (Bloom's: Understand) 	<ul style="list-style-type: none"> Count unit squares on grid paper to find the area of given squares and rectangles. Draw shapes on grid paper with a given area.
9.3 Estimating triangle area	<ul style="list-style-type: none"> M-G4-S2-SD1-B5-03 Estimate the area of a triangle on a square grid by combining whole and partial unit squares. (Bloom's: Understand; Evaluate) 	<ul style="list-style-type: none"> Count whole and part squares on grid paper to estimate a triangle's area. Estimate the area of two triangles and check which estimate was closer using careful counting.

Key Vocabulary: perimeter, area, unit square, square grid, square, rectangle, triangle.

Strand: Statistics and Probability

Unit 10: Statistics

Content / Topics	Student Learning Outcomes	Suggested Activities
10.1 Carroll diagrams	<ul style="list-style-type: none"> M-G4-S3-SD1-B1-01 Read and interpret data using a Carroll diagram e.g. sorting numbers, shapes or attributes (two-way classification). (Bloom's: Understand; Analyze) 	<ul style="list-style-type: none"> Sort classroom objects or class data into a Carroll diagram.
10.2 Constructing Carroll diagrams	<ul style="list-style-type: none"> M-G4-S3-SD1-B1-02 Construct Carroll diagram. (Bloom's: Create) 	<ul style="list-style-type: none"> Create your own two-way classification question and sort class data into it. Make a large 2x2 grid on the floor with tape or chalk. Call out two criteria, such as "wears glasses" and "has a brother." Conduct a class survey and represent the results on a Carroll diagram.

Key Vocabulary: Carroll diagram, data, frequency.

MATHEMATICS — GRADE V

Strand: Number and Algebra

Unit 1: Number Operations

Content / Topics	Student Learning Outcomes	Suggested Activities
1.1 Completing number sequences	<ul style="list-style-type: none"> M-G5-S1-SD1-B2-01 Complete number sequences involving whole numbers, following a given rule. <i>(Bloom's: Understand)</i> 	<ul style="list-style-type: none"> Identify the rule and complete given number sequences. Create an original number sequence following a rule and challenge a partner to find it.
1.2 Representing pattern rules	<ul style="list-style-type: none"> M-G5-S1-SD1-B2-02 Represent pattern rules using tables and charts. <i>(Bloom's: Understand; Analyze; Create)</i> 	<ul style="list-style-type: none"> Build tables and charts to represent pattern rules for given sequences. Given a completed input-output table, work out and state the rule used.
1.3 Multiplying 3-digit by 2-digit	<ul style="list-style-type: none"> M-G5-S1-SD1-B4-01 Multiply a 3-digit number by a 2-digit number using the standard algorithm including real-life situations. <i>(Bloom's: Understand; Application)</i> 	<ul style="list-style-type: none"> Multiply 3-digit by 2-digit numbers using the column/grid method. Solve word problems requiring multiplication of 3-digit by 2-digit numbers.
1.4 Multiplying by 10/100/1000	<ul style="list-style-type: none"> M-G5-S1-SD1-B4-02 Multiply 3-digit numbers by 10, 100 and 1000, recognizing the place-value pattern including real-life situations. <i>(Bloom's: Understand; Application)</i> 	<ul style="list-style-type: none"> Investigate and describe the pattern when multiplying 3-digit numbers by 10, 100 and 1000. Rapidly multiply given numbers by 10, 100 and 1000 using the place-value pattern. $\times 10$ and $\times 100$ as place-value shifts. The digits move one or two places to the left.
1.5 Dividing up to 3 digits	<ul style="list-style-type: none"> M-G5-S1-SD1-B4-03 Divide a number up to 3 digits by a number up to 2 digits, with and without remainder including real-life situations. <i>(Bloom's: Understand; Application)</i> M-G5-S1-SD1-B4-04 Use mental math strategies for multiplying and dividing numbers <i>(Bloom's: Application)</i> 	<ul style="list-style-type: none"> Practice dividing numbers up to 3 digits by 1- and 2-digit divisors, with remainders. Solve real-life sharing/grouping problems involving 3-digit by 2-digit division. $\times 25$ and $\times 50$ using $\times 100$ $36 \times 25 = 36 \times (100 \div 4)$ $= 3600 \div 4 = 900$ $48 \times 50 = 48 \times (100 \div 2)$ $= 4800 \div 2 = 2400$ https://mathantics.com/lesson/long-division https://mathantics.com/lesson/long-division-with-2-digit-divisors
1.6 Order of operations (DMAS)	<ul style="list-style-type: none"> M-G5-S1-SD1-B4-05 Apply the correct order of operations (Division, Multiplication, Addition, 	<ul style="list-style-type: none"> Solve mixed-operation puzzles that require the correct order of operations.

	Subtraction — DMAS) to solve mixed calculations. (Bloom's: Understand)	<ul style="list-style-type: none"> Compare two different orders of solving the same expression to see why DMAS gives the correct answer. https://mathantics.com/lesson/order-of-operations
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Key Vocabulary: sequence, pattern, rule, table, chart, estimate, round, nearest multiply, product, divide, quotient, remainder, order of operations, DMAS

Unit 2: Money

Content / Topics	Student Learning Outcomes	Suggested Activities
2.1 International currencies	<ul style="list-style-type: none"> M-G5-S1-SD1-B5-01 Identify major international currencies (Dollar, Riyal, and Euro). (Bloom's: Remember) M-G5-S1-SD1-B5-02 Solve money problems involving addition and subtractions of a few selected international currencies (Dollar, Riyal, and Euro) including real-life situations. (Bloom's: Application) 	<ul style="list-style-type: none"> Convert given amounts between Rupee., Dollar, Riyal and Euro using sample exchange rates. Match currency names and symbols (Rs, \$, Riyal, €) to the correct country.
2.2 Money: expenses, savings, purchases	<ul style="list-style-type: none"> M-G5-S1-SD1-B5-03 Compare the prices and quantities of products to determine which option provides the best value for money. (Bloom's: Application; Analyze; Evaluate) 	<ul style="list-style-type: none"> Apply money involving expenses, savings and purchasing decisions in real-life situations. Plan a simple travel budget expressed in more than one currency. Work through real-life decision-making scenarios involving saving, spending and purchasing.

Key Vocabulary: Quantity, currency, Dollar, Riyal, Euro, expense, saving, purchasing, budget.

Unit 3: Factors and Multiples

Content / Topics	Student Learning Outcomes	Suggested Activities
3.1 Square & cube numbers	<ul style="list-style-type: none"> M-G5-S1-SD1-B6-01 Identify square and cube numbers and express them in index form (first 10 digits). (Bloom's: Remember) 	<ul style="list-style-type: none"> Build square numbers with arrays and cube numbers with cube blocks, then write them in index form. Match numbers in expanded form to their index-form notation.
3.2 Prime factorization	<ul style="list-style-type: none"> M-G5-S1-SD1-B6-02 Find the prime factors of a given number using a factor tree. (Bloom's: Understand) 	<ul style="list-style-type: none"> Break down numbers into their prime factors using a factor tree. In pairs, race to complete factor trees for a set of given numbers.

- <https://mathantics.com/lesson/prime-factorization>

Key Vocabulary: square number, cube number, index form, power, prime factorization, factor tree.

Unit 4: Fraction, Decimals and Percentage		
Content / Topics	Student Learning Outcomes	Suggested Activities
4.1 Equivalent fractions	<ul style="list-style-type: none"> • M-G5-S1-SD1-B6-03 Identify equivalent fractions using fractions models or diagrams. <i>(Bloom's: Remember)</i> • M-G5-S1-SD1-B6-04 Compare two fractions using symbols. '<', '>' and '='. <i>(Bloom's: Understand)</i> 	<ul style="list-style-type: none"> • Match equivalent fractions using a fraction wall or folded paper strips. • Play bingo matching fractions to their equivalent forms. • https://mathantics.com/lesson/comparing-fractions
4.2 Addition & subtraction of fractions	<ul style="list-style-type: none"> • M-G5-S1-SD1-B6-05 Add and subtract fractions with unlike denominators including real-life situations. <i>(Bloom's: Understand; Application)</i> 	<ul style="list-style-type: none"> • Add and subtract unlike fractions using a fraction wall to find common denominators. • Solve real-life problems combining unlike fraction quantities (e.g., ingredients). • https://mathantics.com/lesson/common-denominator-eqd
4.3 Multiplication & division of fractions	<ul style="list-style-type: none"> • M-G5-S1-SD1-B6-06 Simplify fractions to lowest form. <i>(Bloom's: Understand)</i> • M-G5-S1-SD1-B6-07 Multiply and divide like and unlike fractions including real-life situations. <i>(Bloom's: Understand; Application)</i> 	<ul style="list-style-type: none"> • Multiply and divide like and unlike fractions in real-life situations. • https://mathantics.com/lesson/simplifying-fractions • Use area models to represent and solve fraction multiplication problems. • https://mathantics.com/lesson/multiplying-fractions • https://mathantics.com/lesson/dividing-fractions
4.4 Decimals	<ul style="list-style-type: none"> • M-G5-S1-SD1-B6-08 Compare and order decimals up to 2 decimal places; round to nearest tenth. <i>(Bloom's: Analyze)</i> • M-G5-S1-SD1-B6-09 Add, subtract, multiply and divide decimals up to 2 decimal places including real-life situations. <i>(Bloom's: Understand; Application)</i> 	<ul style="list-style-type: none"> • Compare, order and calculate with decimals up to 2 decimal places on a number line. • https://mathantics.com/lesson/decimal-place-value • Solve real-life money-based real-life situations requiring addition & subtraction of decimals. • https://mathantics.com/lesson/decimal-arithmetic

4.5 Percentage	<ul style="list-style-type: none"> M-G5-S1-SD1-B6-10 Explain the concept of percentage including real-life situations. (Bloom's: Understand; Application) M-G5-S1-SD1-B6-11 Convert percentages into fractions and decimals and vice versa. (Bloom's: Understand) 	<ul style="list-style-type: none"> https://mathantics.com/lesson/what-are-percentages https://mathantics.com/lesson/percents-and-equivalent-fractions Match equivalent percentages, fractions and decimals using a conversion triangle game. Identify and calculate simple percentages from real-life contexts (e.g., discounts, marks). https://mathantics.com/lesson/fractions-and-decimal-numbers https://mathantics.com/lesson/converting-base10-fractions
Key Vocabulary: unlike fractions, common denominator, multiply, divide, decimal, decimal place, percentage, convert.		

Strand: Measurement and Geometry		
Unit 5: Time		
Content / Topics	Student Learning Outcomes	Suggested Activities
5.1 Time intervals	<ul style="list-style-type: none"> M-G5-S2-SD1-B2-01 Calculate time intervals given a starting and ending time. (Bloom's: Understand) 	<ul style="list-style-type: none"> Calculate how long a journey or activity takes given start and end times. Solve real-life scenario cards involving time intervals.
5.2 Conversion (hours/minutes/seconds)	<ul style="list-style-type: none"> M-G5-S2-SD1-B2-02 Convert hours into minutes and minutes into seconds including real-life situations. (Bloom's: Understand; Application) 	<ul style="list-style-type: none"> Complete conversion tables changing hours to minutes and minutes to seconds. Convert race/activity times between minutes and seconds in real-life sport scenarios.
Key Vocabulary: interval, starting time, ending time, convert, hour, minute, second.		

Unit 6: Lines and Angles		
Content / Topics	Student Learning Outcomes	Suggested Activities
6.1 Straight & reflex angles	<ul style="list-style-type: none"> M-G5-S2-SD1-B3-01 Identify and classify straight and reflex angles in real-life situations. (Bloom's: Remember; Analyze) 	<ul style="list-style-type: none"> Sort a set of angles into acute, obtuse, right, straight and reflex categories from cutouts. Find and classify angles found in the classroom or school environment.
6.2 Measuring/ drawing angles	<ul style="list-style-type: none"> M-G5-S2-SD1-B3-02 Measure and draw angles accurately using a protractor and ruler. (Bloom's: Understand) 	<ul style="list-style-type: none"> Measure and draw given angles accurately using a protractor and ruler. Construct a given polygon by drawing angles of specified sizes.

Key Vocabulary: straight angle, reflex angle, protractor, ruler, measure, draw.

Unit 7: 2-D and 3-D Shapes

Content / Topics	Student Learning Outcomes	Suggested Activities
7.1 Triangles	<ul style="list-style-type: none"> M-G5-S2-SD1-B4-01 Identify and describe the types of triangles based on their sides and angles. (<i>Bloom's: Remember; Understand; Analyze</i>) 	<ul style="list-style-type: none"> Sort triangles by their sides (equilateral, isosceles, scalene) and angles (acute, obtuse and right angled triangles). Record the side and angles of different triangles in a table.
7.2 Reflective & rotational symmetry	<ul style="list-style-type: none"> M-G5-S2-SD1-B4-02 Identify lines of reflective symmetry and the order of rotational symmetry in 2-D shapes. (<i>Bloom's: Remember; Understand; Analyze</i>) 	<ul style="list-style-type: none"> Use paper folding and a mirror to find lines of reflective symmetry and test for rotational symmetry. Rotate shape cut-outs to count how many times they match the original in one full turn.
7.3 3-D objects from nets	<ul style="list-style-type: none"> M-G5-S1-SD1-B4-03 Identify 3-D objects (cube, cuboid, cone and cylinder) from their nets. (<i>Bloom's: Remember</i>) 	<ul style="list-style-type: none"> Fold given nets to build 3-D solids and match nets to their corresponding shapes. Match a set of unfolded nets to pictures of the correct 3-D solid. https://www.youtube.com/watch?v=uWfu-Hvbxn8

Key Vocabulary: quadrilateral, parallelogram, trapezium, rhombus, reflective symmetry, rotational symmetry, net, 3-D object.

Unit 8: Perimeter and Area

Content / Topics	Student Learning Outcomes	Suggested Activities
8.1 Perimeter formula	<ul style="list-style-type: none"> M-G5-S2-SD1-B5-01 State and apply the formula for the perimeter of a square, rectangle and triangle including real-life situations. (<i>Bloom's: Understand; Application</i>) 	<ul style="list-style-type: none"> Apply perimeter formulas to a range of squares, rectangles and triangles. Solve a real-life design situation (fencing a garden) using the perimeter formula.
8.2 Area formula	<ul style="list-style-type: none"> M-G5-S2-SD1-B5-02 State and apply the formula for the area of a square, rectangle and right angled triangle including real-life situations. (<i>Bloom's: Understand; Application</i>) 	<ul style="list-style-type: none"> Use grid counting to see why area = length $\times$ width for square and rectangle, then generalize the formula. Solve a real-life design situation (flooring a room) using the area formula. https://mathantics.com/lesson/area

Key Vocabulary: perimeter, area, formula, base, height, length, width, square units.

Strand: Statistics and Probability**Unit 9: Statistics and Probability**

Content / Topics	Student Learning Outcomes	Suggested Activities
9.1 Reading bar graphs	<ul style="list-style-type: none">• M-G5-S3-SD1-B1-01 Read and interpret data presented in bar graphs. (Bloom's: Understand; Analyze)	<ul style="list-style-type: none">• Answer questions about given bar graphs.• Set and answer three questions based on a displayed class bar graph.
9.2 Constructing bar graphs	<ul style="list-style-type: none">• M-G5-S3-SD1-B1-02 Construct horizontal and vertical bar graphs from real-life data. (Bloom's: Analyze; Create)	<ul style="list-style-type: none">• Collect real-life data (e.g., weather, attendance) and construct bar graph to represent it.• Choose a class topic to survey and design an accurate bar graph of results.
9.3 Average	<ul style="list-style-type: none">• M-G5-S1-SD1-B1-03 Calculate the arithmetic mean of the given data. (Bloom's: Application)	<ul style="list-style-type: none">• Collect data of scores/class test/ in a class to find arithmetic mean
9.4 Possible outcomes	<ul style="list-style-type: none">• M-G5-S3-SD1-B2-01 Identify all possible outcomes of a simple experiment (e.g., coin, toss, dice roll). (Bloom's: Remember)	<ul style="list-style-type: none">• Conduct repeated coin, toss or dice roll experiments and tally the outcomes.• List all possible outcomes before conducting a coin, toss or dice roll experiment.• https://youtu.be/bZqwMRSAXIc
9.5 Chance language	<ul style="list-style-type: none">• M-G5-S3-SD1-B2-02 Describe the chance of an event using everyday language (certain, likely, unlikely, impossible). (Bloom's: Understand; Analyze)	<ul style="list-style-type: none">• Sort everyday events onto a scale from impossible to certain using chance language.• Match given events to the correct chance-language term (certain, likely, unlikely, impossible).• https://mathantics.com/lesson/basic-probability
Key Vocabulary: bar graph, horizontal, vertical, data, interpret, trend, probability, chance, outcome, certain, likely, unlikely, impossible, experiment.		

Chapter 5

GUIDELINES FOR MATHEMATICS PEDAGOGY

5.1 Introduction: Principles of Teaching and Learning

Pedagogy for Mathematics in the New National Curriculum of Pakistan (NNCP) 2026 aims to nurture confident, reasoning learners across three core strands — Numbers and Algebra; Measurement and Geometry; and Statistics and Probability — from Grade I through Grade V. Teaching strategies must address both the cumulative and symbolic nature of Mathematics and the concrete developmental needs of 21st century learners.

The Student Learning Outcomes (SLOs) in Chapter 3&4 are structured around the **Concrete-Pictorial-Abstract (CPA) progression**. Learners first explore concepts using physical objects such as counters, ten-frames, bead strings, balances, and shape cut-outs. They then represent these ideas pictorially through drawings, number lines, tally charts, and graphs. Finally, they transition to abstract symbols, numerals, and written procedures.

The SLOs are also aligned with Bloom's Taxonomy, progressing from Remember and Understand in the early grades to Apply, Analyze, and Create in later grades. This ensures that factual recall is balanced with reasoning, problem-solving, and the application of Mathematics to real-life contexts, including money, time, measurement, and data drawn from the classroom, school and community.

Talk in Mathematics

Students are encouraged to explain their thinking, describe their strategies, justify answers, and respond to others' ideas using correct mathematical vocabulary. Structured discussion in pairs, groups, and whole-class settings helps learners clarify their understanding, compare different approaches, and learn from mistakes. It also gives teachers a window into students' reasoning, so they can address misconceptions early and build deeper understanding.

No single teaching method can achieve this balance alone. Therefore, the approaches outlined in Section 5.2 should be combined and sequenced according to the cognitive demand of each SLO, the content strand, and the developmental stage of the learner, as described in Section 5.3.

5.2 Recommended Pedagogical Approaches for Mathematics

The seven approaches below operationalize the CPA progression and the Bloom's-aligned SLOs from Chapter 4. Each approach includes its rationale for Mathematics learning and an illustrative activity drawn directly from Chapter 4.

Inquiry-Based Learning

- Learners explore a mathematical question or pattern before being introduced to a rule, formula, or procedure. Teachers use open-ended prompts such as "What do you notice? What comes next? Why?" instead of beginning with direct explanation.

- In Mathematics, inquiry strengthens number sense and pattern recognition, and prepares learners for Analyze and Evaluate-level SLOs, such as comparing quantities, extending patterns, and interpreting graphs.

Example Activity: Before introducing the symbols $>$, $<$, and $=$, have learners work in pairs with two groups of objects on a balance scale. Ask them to determine and explain which set has more, less, or an equal amount. (e.g. Grade I, SLO 1.3: Comparing Numbers).

Experiential Learning

- Learners build extract meaning through direct, first-hand experiences such as role-play, real transactions, and measuring and timing events, rather than through abstract explanation alone.
- Since many SLOs are framed in real-life contexts, the experiential tasks allow learners to encounter Mathematics in the same way they will outside the classroom.

Example Activity: Set up a classroom ‘shop’ with items priced up to Rs. 20. Learners take turns buying items, paying, and calculating change using real or play currency. (Grade I, Unit 3: Money)

Activity-Based Learning

- Hands-on tasks with manipulative — counters, ten-frames, bead strings, geo-boards, shape sets — form the Concrete stage of the CPA progression and are the primary vehicle for teaching new content in Grade I–Grade II.
- Physical manipulation lets learners ‘see’ an operation happen before it is recorded symbolically, reducing reliance on memorized procedures.

Example Activity: Learners use a 20-bead string, physically jumping the beads forward and backward in 2s, 3s and 5s while chanting the sequence (Grade I, 1.5 Skip counting).

Project-based learning

- Managing sustained, multi-step investigations that span multiple SLOs, such as a complete survey-to-graph project, represents a major shift from single-lesson instruction.
- Projects give learners ownership of the full data chain (question → collection → representation → interpretation) rather than practicing each step in isolation. This strategy is best suited to Grades III–V.

Example Activity: Learners choose a class survey question (favorite fruit, sport or pet), collect responses using tally marks, construct a picture or bar graph of the results, and present their findings and conclusions to the class (Grade III–IV, Unit 10: Statistics, SLOs 10.1–10.3).

Collaborative Learning

- Learners work in pairs or small groups to sort, compare, solve or justify, using mathematical talk to explain and defend their thinking to peers.
- Peer discussion surfaces misconceptions early, exposes learners to more than one valid strategy, and builds the vocabulary introduced in each unit’s Key Vocabulary list.

Example Activity: In pairs, learners sort a mixed set of 2-D and 3-D shape cut-outs and everyday objects into labelled groups, taking turns to justify each sorting decision to their partner (Grade I & II, Unit 6: Shapes).

Problem-solving and critical thinking

- Learners are designing non-routine, real-life problems with multiple valid solution strategies, rather than guiding learners toward a single method.
- This approach directly targets the Apply, Analyze and Create SLOs and develops the reasoning and justification skills as learners move beyond facts recall.

Example Activity: Give learners a real-life addition or subtraction story (e.g. sharing fruit or toys). Let them represent it using counters, a ten-frame or a part-part-whole diagram of their choice, then explain why their method worked (Grade I, Unit 2: Number Operations, SLOs 2.1–2.3).

Integration of technology

- Addressing uneven digital access across schools while ensuring that technology remains a supplement to, not a replacement for, concrete and pictorial learning at this stage.
- Technology is introduced gradually and more effectively from Grade III onward, once the learners grab the concrete and pictorial forms of a concept. The age-appropriate resources such as virtual manipulative, simple calculators for checking, and basic spreadsheet or graphing tools can be considered for this purpose.

Example Activity: After constructing a hand-drawn picture graph from their survey data, learners re-enter the same data into a simple spreadsheet or graphing app and compare the digital and paper versions of their graph (Grade IV–V, Statistics and Probability strand).

5.3 Developmental Considerations

The seven approaches described above are not applied uniformly across the primary years. The balance among concrete activity, guided inquiry, and independent application shifts as learners' progress from Grade I to Grade V, in accordance with the CPA progression and the Bloom's levels assigned to each SLO in Chapter 4.

Lower Primary (Grade I-II)

At this stage, teaching is concrete, play-based, and highly interactive. It aligns with the Concrete stage of the CPA progression and the predominantly Remember/Understand-level SLOs for Grades I–II. Learners work almost exclusively with physical objects and movement, including bead strings, ten-frames, balance pans, number tracks, sand trays, and 'mystery bag' touch-and-identify tasks. Activities are kept short, repetitive, and richly supported by language, so that mathematical vocabulary such as more than, less than, before, after, add, and subtract is developed alongside conceptual understanding.

Upper Primary (Grades III–V)

In the upper primary years, learners become increasingly capable of sustained, independent engagement, and the SLOs shift accordingly toward the Apply, Analyze, and Create levels of Bloom's Taxonomy. Teaching progresses along the CPA continuum from pictorial representations, such as tally charts, picture

graphs, and part-part-whole diagrams, toward more abstract recording, while remaining fundamentally activity-based. Structured inquiry, class and group projects, peer discussion, and multi-step problem-solving in familiar, real-life contexts, such as money, measurement, time, and data collected from the school, become the dominant modes of learning. Concrete manipulative are retained to introduce any genuinely new concept before learners' transition to symbolic work.

5.4 Implications for Teacher Professional Development

Effective implementation of the pedagogical approaches described above, with fidelity to the CPA progression and the Bloom's-aligned SLOs in Chapter 4, has direct implications for how Mathematics teachers are trained, supported, and monitored.

Knowledge and Skilled Teachers

- A thorough working knowledge of the CPA progression and the ability to sequence activities from concrete to pictorial to abstract for a given SLO, rather than beginning with abstract symbols.
- Confident and cost-effective use of manipulative, such as counters, ten-frames, bead strings, balances, and shape sets, and locally available substitutes where commercial materials are not available.
- Questioning techniques aligned with the Bloom's level of the SLO being taught: open-ended exploratory questions for Analyze/Create/Evaluate-level outcomes, and focused, guided questions for Remember/Understand-level outcomes.

Approaches Requiring Additional Training and Support

- **Project-based learning:** Managing sustained, multi-step, cross-SLO investigations, such as a complete survey-to-graph project, requires a significant shift from single-lesson instruction.
- **Problem-solving and critical thinking:** Designing non-routine, real-life problems that allow for multiple valid strategies, rather than directing learners toward a single prescribed method.
- **Integration of technology:** Navigating varied levels of digital access across schools while ensuring that digital tools complement, rather than replace, concrete and pictorial learning at this stage.

Competencies to Facilitate Inquiry, Experiential, Activity-Based, and Project-Based Learning

- Skillful use of open-ended questioning and scaffolding that supports learner reasoning without providing the answer.
- Effective classroom and resource management for simultaneous hands-on group work, including the safe and organized use of manipulative.
- Real-time formative observation: identifying and responding to each learner's position on the CPA continuum during an activity, not only at its conclusion.

Support Needed to Promote Higher-Order Thinking, Problem-Solving, and Competency Development

- A shared bank of exemplar real-life word problems and open-ended tasks for each strand and grade, mapped to the Apply/Analyze/Create SLOs.
- Clear success criteria and rubrics for Create-level tasks, such as constructing graphs or composing number stories, to ensure consistent quality expectations across sections and schools.
- Structured peer coaching and lesson study focused on the quality of questioning and reasoning, not merely on content delivery.

Guidance for Addressing Diverse Learner Needs and Inclusive Practices

- Using the CPA progression itself as a tool for differentiation: concrete materials remain accessible for learners who need them, while pictorial and abstract extension tasks challenge learners who are ready to progress.
- Intentional use of the Key Vocabulary list in each unit to scaffold mathematical language for learners requiring additional language support.
- Flexible pacing and grouping, enabled by the streamlined SLOs, which allows time for re-teaching at the concrete stage, where necessary, without compromising the overall grade-level sequence.

Mentoring and Monitoring to Sustain Quality Pedagogy

- Classroom observation focused explicitly on CPA sequencing and Bloom's-aligned questioning, using a simple, shared observation checklist.
- Regular peer-learning circles and cluster meetings for teachers to exchange manipulative, activities, and locally developed real-life problems.
- Periodic review of learners' formative work against the SLOs to identify areas where teachers need further coaching, with findings helping to guide directly into future training cycles.

Chapter 6

GUIDELINES FOR ASSESSMENT

6.1 Introduction: Purpose of Assessment

Assessment in NNCP 2026 Mathematics establishes what learners know, understand and can do. It is integrated with teaching through oral, written and practical evidence appropriate to the learning expected in Grades I–V.

Assessment identifies prerequisite knowledge, misconceptions, learning gaps and strengths. It supports instructional decisions, reporting and readiness for further learning, including lower-secondary Mathematics. Judgment should consider mathematical accuracy, conceptual understanding, methods, representations and explanations rather than marks alone.

Supporting Learning and Mathematical Progression

Assessment should make progression visible as learners move from concrete experiences to pictorial representations, symbolic notation, independent application and reasoning. For example, one-half may be assessed through a folded shape, fraction notation and an equal-sharing problem. Diagnostic, formative and summative evidence should identify needs, guide feedback and confirm achievement.

Alignment with Standards, Benchmarks and SLOs

The assessment chain is:

Standards → Benchmarks → Grade-wise SLOs → Assessment Evidence

Each task and its scoring criteria should reflect the SLO's content range, representation, context and cognitive demand. If an SLO has more than one cognitive tag, different tasks may collect the required evidence; the SLO remains one curriculum outcome.

Developing Knowledge, Skills, Attitudes and Competencies

Assessment should connect mathematical knowledge with purposeful action. Measuring an object reveals understanding of units, instrument use and recording accuracy; interpreting a graph reveals comparison, reasoning and communication; a spending-and-saving problem reveals calculation and responsible decision-making. Psychomotor outcomes require direct performance. Specified attitudes and values should be recorded through repeated observable behavior and kept distinct from mathematical accuracy.

6.2 Principles of Assessment

Mathematics assessment should generate dependable evidence of understanding, skills, reasoning and application. The following principles guide curriculum developers, assessment designers and teachers.

Principle	Mathematics-specific guidance
Alignment	Trace every task to the relevant Standard, Benchmark and SLO; preserve the specified content, range, representation and cognitive demand.
Construct clarity	Define one assessable mathematical focus. Where related skills are integrated, scoring criteria should distinguish them.
Balanced coverage	Use a Table of Specifications to balance Number and Algebra, Measurement and Geometry, and Statistics and Probability, including conceptual understanding, fluency and reasoning.
Developmental appropriateness	Match language, task length, representations and response modes to readiness, while maintaining progression from concrete and pictorial work towards abstraction.
Full range of learning	Collect evidence of knowledge, understanding, procedural fluency, reasoning, communication, practical performance and specified attitudes.
Validity	Assess Mathematics rather than unnecessary reading load, handwriting difficulty or irrelevant time pressure.
Reliability and fairness	Use clear instructions, marking schemes, rubrics and moderation so equivalent work receives comparable judgment; provide reasonable access accommodations.
Higher-order thinking	Include explanation, strategy comparison, error analysis, justification, pattern generalization and creation when required by the SLO.
Authentic application	Use familiar Pakistani contexts such as currency, time, measurement, household quantities, local data and environmental situations.
Multiple evidence and feedback	Combine written, oral, observed and practical evidence; provide timely feedback that identifies the difficulty and the next mathematical step.
Feasibility and responsible use	Keep assessment manageable, protect confidentiality and use results for decisions justified by the evidence collected.

6.3 Bloom's Cognitive Taxonomy in Mathematics

Bloom's taxonomy describes the thinking required by an assessment task. It should be used to tag SLOs, balance the Table of Specifications and select suitable evidence. Cognitive demand is determined by the learner's action, not simply by the size of the numbers or the format of the item.

Cognitive level	Meaning in Mathematics	Illustrative evidence	Suitable assessment evidence
Knowledge	Recall or recognize facts, terms, symbols, properties and procedures.	Name a triangle; read 3,405; state the value of a digit.	Oral questioning; selected response; short written item.
Understanding	Explain, interpret, represent, compare or demonstrate mathematical meaning.	Represent $\frac{1}{2}$ with a model and explain why the parts are equal.	Model, diagram, explanation or constructed response.
Application	Use a concept, procedure or representation to solve a familiar or real-life problem.	Use addition to find the cost of two items in a class shop.	Contextual problem; practical task; measurement.
Analysis	Break information into parts, identify relationships, classify, compare or determine a pattern.	Examine a data display and identify the relationship between categories.	Sorting; error analysis; pattern or data investigation.
Evaluation	Make and justify a judgment using stated mathematical criteria.	Compare two strategies for finding area and justify which is more efficient.	Strategy comparison; verification; reasoned decision.
Creation	Combine mathematical ideas to produce a new representation, rule, construction or solution.	Create a repeating pattern or design several rectangles with a given perimeter.	Investigation; graph or diagram construction; open task.

For multi-tagged SLOs, each tag indicates a different evidence requirement. The SLO remains one outcome, while each item or item-part is assigned one primary cognitive demand for blueprinting and scoring. Knowledge and Understanding are not interchangeable: Knowledge recalls or recognizes, whereas Understanding demonstrates meaning.

6.4 Types of Assessment

Diagnostic, formative and summative assessment serve complementary purposes. The same mathematical situation may be used differently depending on when evidence is collected and how it informs decisions.

Type	Purpose	Appropriate use	Concrete Mathematics example
Diagnostic	Establish readiness, identify misconceptions and determine starting points, support or extension.	Before new learning or when difficulty appears; use focused questions and practical tasks.	Bottle caps: ask how many are in 3 and 2 groups. Pencils: ask which is longer and observe alignment.
Formative	Improve learning while it develops through feedback, adaptation and follow-up checking.	During learning; notice strategies and errors, provide a specific prompt, and then check the revised response.	Prompt a learner to move each counted cap once; align two pencils at a common starting point and compare again.
Summative	Provide an overall judgment after a defined period for grading, reporting and progression decisions.	At the end of a unit, term or stage; sample taught SLOs and judge evidence against clear criteria.	Give a new addition task without hints; independently compare a new pair of pencils and record the result.

6.5 Assessment Methods

Method	Primary purpose	NNCP Mathematics example
Written assessment	Calculation, conceptual understanding, written reasoning and application.	Calculate $36 + 27$ and show place-value working.
Teacher observation	Strategies, practical actions, participation and misconceptions not visible in an answer.	Observe whether learners align two pencils before comparing length.
Performance-based assessment	Procedures, tool use, representation and accuracy of a completed product.	Draw a 60° angle with a ruler and protractor using stated criteria.
Projects and investigations	Organizing information, applying Mathematics and reaching a supported conclusion.	Survey favorite fruits, construct a bar graph and state the most common category.
Portfolio assessment	Progress over time, revision, independence and quality of mathematical communication.	Keep dated fraction models, corrections and later independent representations.
Self-assessment	Learner reflection on strategy, accuracy, confidence and next step.	Use a checklist: "I aligned the ruler, recorded cm and checked my answer."

Method	Primary purpose	NNCP Mathematics example
Peer assessment	Collaborative checking, explanation and use of agreed criteria.	A partner checks a graph title, scale, labels and conclusion using a simple rubric.
Oral questioning and discussion	Mathematical language, explanation and reasoning, especially where writing is not the construct.	Ask why $\frac{1}{2}$ is greater than $\frac{1}{4}$ and accept a model plus explanation.

6.6 Assessing Different Types of Learning

Learning type	Assessment guidance	Illustrative evidence
Knowledge-based outcomes	Assess facts, vocabulary, symbols, relationships and conceptual meaning through recognition, explanation, models and representations.	Show two shapes with shaded parts; identify which represents one-half and explain that the parts must be equal.
Skills-based outcomes	Assess application, procedural fluency and psychomotor performance through appropriate methods, tool use, process and product. Record the level of support.	Measure a rectangular card, calculate the perimeter and show ruler alignment, units and working.
Attitudes and values-based outcomes	Assess specified dispositions through repeated, observable behavior; report them separately from mathematical accuracy.	Across class-shop tasks, observe responsible sharing, honest recording, perseverance and explanation of a saving choice.

6.7 Developmental Considerations

Assessment should move from supported, concrete demonstrations towards increasingly independent pictorial, abstract, written and reasoned performance. Concrete materials and oral explanation remain appropriate whenever they reveal the intended Mathematics.

Stage	Assessment emphasis	Justified Mathematics examples
Lower Primary (Grades I - II)	Observation, oral questioning, play-based tasks, manipulative, pictures, brief written responses and portfolios.	Count bottle caps, compare pencils, model equal sharing, and measure with familiar units, sort objects or explain a pictorial graph. Record accuracy, representation, language and level of support.

Stage	Assessment emphasis	Justified Mathematics examples
Upper Primary (Grades III–V)	Structured written tasks, investigations, projects, presentations, multi-step problems, performance tasks, peer/self-assessment and mathematical justification.	Investigate factors, construct and interpret graphs, measure and calculate perimeter/area, compare strategies, solve a budget problem or explain a probability conclusion. Score mathematics, reasoning, communication and independence separately.

6.8 Assessment of Competencies and Cross-Cutting Themes

Competencies and cross-cutting themes should enrich mathematical contexts rather than become additional, separately tested content. Record mathematical evidence and behavioral evidence against separate criteria; group work must not replace evidence of each learner's understanding.

Competency or theme	Assessment focus	Illustrative Mathematics task
Critical thinking and problem-solving	Interpret information, select a strategy, test solutions and justify conclusions.	Choose items within a Rs. 200 budget, calculate the balance and explain the decision.
Communication and representation	Use mathematical language, symbols, diagrams, tables and graphs accurately.	Interpret a bar graph and explain the greatest category using numbers from the graph.
Collaboration and socio-emotional learning	Listen, share materials, contribute ideas, persist and respond constructively to feedback.	In a data survey, each learner explains one result and describes their contribution.
Values, ethics and responsible behavior	Record honestly, calculate carefully, share fairly and correct errors.	During measurement, record actual results, use instruments responsibly and correct an inaccurate reading.
Financial literacy and citizenship	Apply operations, estimation and comparison to responsible choices in familiar Pakistani contexts.	Prepare a purchase plan from a price list, calculate expenditure and justify one saving choice.
Environment, health, culture and inclusion	Use local data and accessible representations to make evidence-based, respectful decisions.	Classify classroom waste, construct a graph and recommend one practical reduction strategy.

6.9 Implications for Teacher Professional Development

Effective implementation requires teachers to understand both the Mathematics being assessed and the quality of evidence needed to judge learning. Professional development should be practical, progressive and grounded in the three strands: Number and Algebra, Measurement and Geometry, and Statistics and Probability.

Professional development area	Required capability	Practical application
Curriculum and SLO interpretation	Read Standards, Benchmarks and SLOs as assessable constructs; identify content, range, representation and cognitive demand.	Annotate an SLO and draft one aligned task and scoring criterion.
Assessment planning and Table of specification	Balance strands, topic areas, cognitive demand and assessment methods without counting multi-tagged SLOs twice.	Build a short blueprint for a monthly, term or final assessment.
Diagnostic assessment and misconceptions	Distinguish conceptual, procedural, language and recording errors; identify prerequisites.	Use diagnostic questions for place value, fraction comparison or unit selection.
Performance and project assessment	Observe measurement, drawing, construction, graphing, investigation and individual contribution.	Use a checklist or analytic rubric for a perimeter task or class survey.
Feedback, moderation and inclusion	Give specific next steps, credit valid methods, apply accommodations and score consistently.	Moderate sample responses and plan a follow-up task for a common misconception.
Professional learning systems	Use exemplars, learner-work analysis, peer observation, collaborative planning and follow-up coaching.	Teachers review an assessment together, compare scoring and revise the next lesson.

The impact of professional development should be judged through observable improvement in SLO alignment, task quality, and diagnosis of misconceptions, scoring consistency, usefulness of feedback and use of evidence for subsequent Mathematics teaching.

Chapter 7

GUIDELINES FOR TEXTBOOKS AND LEARNING MATERIALS DEVELOPMENT

7.1 Introduction: Role of Textbooks and Learning Materials

Textbooks and learning materials are the primary vehicle through which the NNCP 2026 Mathematics standards, benchmarks and Students' Learning Outcomes (SLOs) for Grades I–V reach the classroom: they translate the strand-by-strand SLOs and suggested activities set out in Chapter 4 into structured, sequenced learning experiences that build conceptual understanding through the concrete–pictorial–abstract (CPA) progression, give learners repeated opportunities to practice and apply skills, and connect mathematics to real-life situations as specified in the SLOs themselves.

7.2 Types of Learning Materials

The materials below, taken together, should cover the full range of learning identified in the SLOs — knowledge, procedural skill, application and attitudes — rather than relying on the student textbook alone.

Material	Purpose and Contribution to Learning
Student Textbooks	Present concepts strand-by-strand and unit-by-unit as sequenced in Chapter 4, moving learners through the concrete → pictorial → abstract (CPA) progression for each topic, and anchoring every explanation, worked example and exercise to a named SLO.
Workbooks and Activity Books	Provide graded, repeated practice and application separate from the textbook narrative — computation, construction of graphs and shapes, and multi-step word problems — for Apply/Analyze-level SLOs, with enough volume for learners to consolidate a skill.
Teacher Guides	Turn the 'Suggested Activities' already listed against each SLO in Chapter 4 into step-by-step lesson guidance, suggested pacing across the term, common misconceptions to watch for, and CPA-stage prompts and questioning for each unit.
Manipulative and Learning Kits	Counters, ten-frames, bead strings, number tracks, geometric shapes, balances and measuring tools — essential for the concrete stage of CPA, especially Grades I–III, and referenced directly in the textbook and teacher guide so materials, illustrations and classroom practice all match.

Material	Purpose and Contribution to Learning
Digital Learning Resources	Interactive number lines, virtual manipulative and simple graphing or data-entry tools, particularly useful for Statistics and Probability data handling and for learners needing extra practice at the pictorial stage.
Reading and Supplementary Materials	Short numeracy-themed stories, puzzles and real-life contexts that reinforce the Key Vocabulary already listed for each unit in Chapter 4, and give early finishers or struggling learners additional, lower-stakes engagement with a concept.
Audio-Visual Resources	Short demonstration videos for procedures (e.g. constructing a bar graph, measuring with a ruler) and chants, rhymes or songs to support counting and number-fact recall in early grades. Students, teachers and authors can use the following links to develop the concepts. https://www.generationgenius.com/math-videos-for-kids/ https://mathantics.com/ https://nrich.maths.org/students/primary
Assessment Resources	Question banks, rubrics, diagnostic checklists and answer keys aligned to the assessment types and methods already set out in Chapter 6 (Guidelines for Assessment), so classroom assessment and textbook content stay consistent.

Key Features: Student Textbooks

- One SLO or a small cluster of closely related SLOs per lesson, clearly labelled so teachers and textbook reviewers can trace content back to Chapter 4.
- A consistent lesson structure across the book— introduction/hook, concrete or pictorial development, worked example, guided practice, independent practice, and a short review— so learners and teachers know what to expect in every unit.
- Key Vocabulary highlighted on first use and consistent with the vocabulary list already given for that unit in Chapter 4.

Key Features: Teacher Guides

- Suggested time allocation per lesson and per unit, mapped to the school term.
- Step-by-step guidance for each Suggested Activity in Chapter 4, including what to prepare, how to introduce it, and questions to ask at each CPA stage.
- Notes on common misconceptions for that SLO (e.g. confusing ‘more than’ and ‘less than’, or miscounting on a number line) and how to address them.
- Guidance on differentiation — simpler and extension variants of the same task — for mixed-ability classes.

Key Features: Workbooks and Supplementary Materials

- Enough graded items per SLO for learners to move from guided to independent practice within the same topic.
- Clear answer keys, with worked solutions for multi-step problems so teachers can mark efficiently and give specific feedback.
- Optional extension tasks for learners who finish early, rather than simply more of the same-level practice.

7.3 Content Organization and Learning Experiences

Conceptual Understanding and Progression

- Sequence content strand-by-strand and unit-by-unit exactly as set out in Chapter 4 (Number and Algebra; Measurement and Geometry; Statistics and Probability) do not reorder or merge units across grades.
- Present every topic through the CPA progression: concrete manipulative work first, then pictorial representation, then the abstract symbol or algorithm — never introduce the abstract form before the concrete/pictorial stages have been covered.
- Use real-life numeracy contexts wherever the SLO itself specifies ‘real-life situations’ (e.g. addition/subtraction stories, measurement, data collection), and age-appropriate local examples elsewhere.
- Calibrate the depth of a process verb to the grade and Bloom’s level tagged against each SLO in Chapter 4 — ‘compare’ or ‘explain’ at Grade I (Understand) needs far simpler treatment than the same verb at Grade V (Analyze).
- Build explicit links to prior-grade content — e.g. Grade I skip counting as the foundation for later multiplication — and keep Key Vocabulary consistent with the lists already provided per unit in Chapter 4.
- Keep the volume of content, examples and exercises realistic for the instructional time available; do not pad units beyond what the allotted periods can cover.

Learning Experiences and Skill Development

- Convert the ‘Suggested Activities’ already listed against each SLO in Chapter 4 directly into textbook and workbook tasks, rather than designing new activities from scratch.
- Provide practice and application items pitched at the SLO’s own Bloom’s level — recall/matching tasks for Remember, worked examples and guided practice for Understand/Apply, multi-step or explain-your-reasoning tasks for Analyze.
- Not every SLO needs a block of explanatory text: some (e.g. probability outcome experiments, data-collection tasks) are better addressed entirely through an activity or an assessment task.
- Give Statistics and Probability content (Grade III onward) an inquiry orientation — posing a question, collecting data, and interpreting a graph or outcome — rather than treating it as procedure to memories.

Cross-Cutting Themes

- Embed critical thinking, communication and collaboration through the mathematics tasks themselves — e.g. a class-survey project that ends in a bar graph and a short group presentation of findings.
- Identify opportunities for digital or multimedia tools where feasible, particularly for graphing, data visualization and interactive number-line work.

Learner Engagement

- Use text boxes and sidebars for fun facts, quick challenges and real-life connections — e.g. a ‘Did you know?’ box on how bar graphs are used in weather reports, placed beside the Grade V bar-graph lesson.
- Give learners regular opportunities to connect a task to their own experience — measuring something from home, counting something from their own routine, surveying their own classmates.
- Include optional ‘Go Further’ or ‘Challenge’ boxes that extend an SLO slightly beyond the minimum requirement, to encourage curiosity without raising the bar for every learner.

Subject-Specific Emphasis for Mathematics

- **Emphasize reasoning and justification, not just a correct final answer:** Ask learners to show their working or explain their method wherever the SLO’s Bloom’s level supports it.
- **Emphasize problem-solving over rote procedure:** Favor word problems and open tasks with a clear real-life anchor over long columns of bare computation.
- **Emphasize conceptual understanding of why a procedure works:** Why regrouping is needed in subtraction (for example) alongside the procedure itself, using the CPA stages to build that understanding rather than asserting the rule.

7.4 Alignment with Pedagogical Approaches

Materials should make the following approaches concrete and visible on the page — through the tasks, questions and activities used — rather than leaving them as abstract intentions:

Approach	How It Should Shape the Materials	Example from NNCP Mathematics
Learner-centered approaches	Give learners manipulative and tasks to work with directly, rather than presenting mathematics only through teacher-modelled examples.	A ten-frame and counters provided alongside the Grade I addition-to-20 exercises, for learners to use before attempting the abstract number sentence.
Inquiry-based learning	Structure Statistics and Probability units around a question the learner investigates — collecting, graphing and interpreting data — rather than a worked procedure to copy.	‘What is the most common favorite fruit in our class?’ as the starting question for a Grade V bar-graph task.

Approach	How It Should Shape the Materials	Example from NNCP Mathematics
Play-based learning	Use games, sorting tasks and number-fan activities to deliver Grade I–II SLOs at the concrete stage, in line with the suggested activities already given in Chapter 4.	A ‘more than / less than / equal to’ card-sorting game for Grade I, Unit 1.
Experiential learning	Have learners measure, count and compare real classroom objects rather than only diagrams of objects.	Measuring the length of the classroom door and a pencil with non-standard units before naming standard units.
Project-based learning	Use extended tasks such as a class survey or a measurement investigation to bring together several SLOs within a unit.	A short class survey, taken from posing the question through to a finished bar graph and a one-line conclusion.
Collaborative learning	Build in paired and small-group tasks, particularly for projects, investigations and peer checking of methods.	Pairs checking each other’s number-line jumps before comparing answers as a class.
Problem-solving approaches	Include tasks with more than one valid method or representation, not only single-route procedural questions.	A subtraction word problem that can be solved by counting back, using a number line, or using concrete objects.
Discussion and reflection	Prompt learners to explain how they reached an answer, using the unit’s Key Vocabulary, not just to state the answer.	‘Explain to a partner why you chose more than or less than’ as a follow-up prompt after a comparison task.
Creativity and innovation	Allow multiple valid strategies or representations (concrete, pictorial, abstract) for the same problem rather than a single prescribed method.	Inviting learners to draw, use objects or write a number sentence, whichever they find clearest, for the same addition story.

7.5 Visual Design

- Illustrate the actual concrete-stage manipulative referenced in Chapter 4 (ten-frames, bead strings, number tracks, pan balances) so classroom materials match what learners see in the textbook.
- Balance text and illustration by grade, image-heavy and text-light in Grades I–II, shifting gradually toward more text and abstract notation by Grade V.

- Draw number lines, bar and line graphs, and geometric shapes accurately and to consistent scale; a misleading diagram undermines the very SLO (e.g. ‘reading line graphs’) it is meant to support.
- Use charts, diagrams and simple tables for Statistics and Probability content, and real photographs or realistic illustrations for measurement and real-life problem contexts.
- Keep language and numeral presentation age-appropriate and easy to read, with generous spacing, larger type and clear labelling for early grades, moving toward denser, more text-based layouts by Grade V.
- Use a consistent, limited color and icon system across the book (e.g. one color per content strand, a fixed icon for ‘Key Vocabulary’ or ‘Challenge’ boxes) so learners can navigate the material independently.
- Check that layouts and color choices remain clear if printed in black and white, given that not all schools will use color-printed copies.
- Ensure visuals are culturally relevant — local currency, familiar objects, and everyday contexts, and gender-responsive and inclusive throughout.

7.6 Inclusion and Representation

- Represent both girls and boys in varied, non-stereotyped roles within word problems and illustrations (e.g. girls measuring, building or leading a survey, not only observing).
- Set problems and contexts that reflect Pakistan’s linguistic, cultural, geographic and socio-economic diversity, using a range of regional names, settings and everyday objects, and both rural and urban contexts.
- Represent persons with disabilities positively where relevant, and consider accessible formats or adapted tasks (e.g. larger print, tactile-friendly diagram descriptions) for learners with different needs.
- Avoid stereotyped or biased word-problem contexts (e.g. assumptions about who buys, sells, earns, plays or leads), and avoid discriminatory language throughout.
- Portray different communities, occupations and social groups respectfully and accurately in illustrations and problem contexts, avoiding contexts tied to a single income level or lifestyle.
- Review real-life data used in Statistics and Probability tasks (e.g. survey topics, example datasets) to ensure they are inclusive and appropriate across the range of learners in a classroom.

7.7 Assessment Opportunities within Learning Materials

Learning materials should build in the assessment types and methods already set out in Chapter 6 (Guidelines for Assessment), giving textbook writers concrete places to embed them, and should offer a genuine mix of techniques rather than relying on end-of-chapter questions alone.

Technique	Purpose	Guidance for NNCP Mathematics
Practice exercises	Build fluency through repetition once a concept has been introduced.	Graded from concrete/pictorial support toward independent abstract work within the same exercise set.
End-of-chapter review exercise	Check retention and understanding across the SLOs covered so far in the unit.	Mixed across Remember, Understand, Apply and Analyze, not weighted only to recall, and placed after each numbered subtopic (e.g. after 1.1–1.5) as well as at the end of the unit. MCQ's will be given from Grade 3 onward.
Reflection and self-assessment opportunities	Build learners' own awareness of what they can and cannot yet do.	Simple can-do statements tied directly to an SLO's wording, e.g. 'I can compare two numbers using more than, less than and equal to.'
Performance tasks	Assess whether a skill can be applied, not just described.	For Measurement and Geometry SLOs that specify constructing, measuring or comparing, a hands-on task, not a written question alone.
Project-based assessments	Assess sustained, multi-step mathematical thinking.	For Statistics and Probability from Grade III onward — a short survey or experiment taken through to a graph or conclusion.

Every assessment item embedded in a textbook or workbook should be traceable to a specific SLO and its Bloom's level, using the same content-strand and unit structure as Chapter 4, so that classroom assessment stays aligned with the standards and benchmarks in Chapter 2 and with the assessment guidance in Chapter 7.

Chapter 8

WEIGHTAGE AND TIME ALLOCATION

8.1 Allocation Basis

The SLOs are grouped by strand and content/topic area. The 28 weeks are allocated according to conceptual depth, prerequisite value, representation, procedural fluency and application demands rather than SLO count alone. All time shown is instructional; assessment is excluded.

8.2 Mathematics Total Academic Time: Grades I–V

Grade	Academic Days per Year	School Weeks per Year	School Days per Week	Mathematics Periods per Week	Mathematics Periods per Year	Duration per Period
Grade I	180	36	5	8	288	40 minutes
Grade II	180	36	5	8	288	40 minutes
Grade III	180	36	5	7	254	40 minutes
Grade IV	180	36	5	7	257	40 minutes
Grade V	180	36	5	7	257	40 minutes

8.3 Mathematics Instructional Time: Grades I–V

Grade	SLOs	Topics	Weeks	Days	Periods per Week	Total Periods
Grade I	23	7	28	140	8	224
Grade II	26	7	28	140	8	224
Grade III	37	10	28	140	7	196
Grade IV	37	10	28	140	7	196
Grade V	30	9	28	140	7	196

8.4 Content and Topic Wise Allocation

Grade	Strand	Content or Topic Area	No. of SLOs	Allocated Weeks	Instructional Periods
Grade I	Number and Algebra	Whole Numbers	11	10	80
		Number Operations	4	6	48
		Money	3	3	24
	Measurement and Geometry	Length, Mass and Capacity	3	3	24
		Time	3	2	16
		2D Shapes	4	3	24
		Position and Directions	2	1	8
Grade I Total			30	28	224
Grade II	Number and Algebra	Whole Numbers	7	8	64
		Number Operations	3	5	40
		Money	3	3	24
	Measurement and Geometry	Length, Mass and Capacity	4	4	32
		Time	2	3	24
		3D Shapes	3	3	24
		Position and Directions	4	2	16
Grade II Total			26	28	224
Grade III	Number and Algebra	Whole Numbers	11	6	42
		Number Operations	5	7	49
		Money	3	1	7
		Fractions	3	2	14
	Measurement and Geometry	Length, Mass and Capacity	2	2	14
		Time	3	2	14
		2D and 3D Shapes	2	2	14
		Perimeter and Area	3	2	14
		Position and Directions	3	2	14

Grade	Strand	Content or Topic Area	No. of SLOs	Allocated Weeks	Instructional Periods
	Statistics and Probability	Statistics	4	2	14
Grade III Total			39	28	196
Grade IV	Number and Algebra	Whole Numbers	7	5	35
		Number Operations	6	6	42
		Money	3	3	21
		Factors and Multiples	3	3	21
		Fractions	3	3	21
	Measurement and Geometry	Time	3	1	7
		Lines and Angles	3	3	21
		2D and 3D Shapes	6	2	14
		Perimeter and Area	3	1	7
	Statistics and Probability	Statistics	2	1	7
Grade IV Total			39	28	196
Grade V	Number and Algebra	Number Operations	7	7	49
		Money	3	2	14
		Factors and Multiples	2	2	14
		Fractions, Decimals and Percentage	9	8	56
	Measurement and Geometry	Time	2	1	7
		Lines and Angles	2	2	14
		2D and 3D Shapes	3	3	21
		Perimeter and Area	2	1	7
	Statistics and Probability	Statistics and Probability	5	2	14
Grade V Total			35	28	196

8.5 Instructional Use

The allocated periods cover concept development, concrete-pictorial-abstract representation where appropriate, guided and independent practice, reasoning, real-life application and instructional consolidation. Teachers may adjust the sequence within a topic while retaining 28 instructional weeks for each grade.

8.6 Grade Wise Cognitive Domain Assignments

Grade	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Cognitive Assignments
Grade I	8	15	5	3	0	0	31
Grade II	7	18	3	4	0	0	32
Grade III	8	26	5	9	2	2	52
Grade IV	10	21	5	6	4	3	49
Grade V	7	23	14	9	1	2	56
TOTAL	40	103	32	31	7	7	220

Grades I to V Consolidated Summary and Comparison with NCP 2022–23

Grade	Strand	NNCP 2026 SLOs	NCP 2022–23 SLOs	Change	Percentage change
Grade I	Number and Algebra	18	23	-5	-21.8%
	Measurement and Geometry	12	13	-1	-7.7%
	Statistics and Probability	0	2	-2	-100.0%
Grade I	Grade total	30	38	-8	-21.1%
Grade II	Number and Algebra	13	36	-23	-63.9%
	Measurement and Geometry	13	25	-12	-48.0%
	Statistics and Probability	0	2	-2	-100.0%
Grade II	Grade total	26	63	-37	-58.7%
Grade III	Number and Algebra	22	28	-6	-21.4%
	Measurement and Geometry	13	21	-8	-38.1%
	Statistics and Probability	4	2	+2	+100%
Grade III	Grade total	39	51	-12	-23.5%
Grade IV	Number and Algebra	22	42	-20	-47.6%
	Measurement and Geometry	15	20	-5	-25.0%
	Statistics and Probability	2	2	+0	+0.0%
Grade IV	Grade total	39	64	-25	-39.1%
Grade V	Number and Algebra	21	36	-15	-41.7%
	Measurement and Geometry	9	17	-8	-47.1%
	Statistics and Probability	5	4	+1	+25%
Grade V	Grade total	35	57	-22	-38.6%
Grades I–V	Number and Algebra	96	165	-69	-41.8%
	Measurement and Geometry	62	96	-34	-35.4%
	Statistics and Probability	11	12	-1	-8.3%
Grades I–V	Grand total	169	273	-104	-38.1%

NNCP 2026

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NOTIFICATION

F.No.1-1/2025/NCC(Acad): In exercise of the powers conferred under Section 3(2)(a) of the Federal Supervision of Curricula, Textbooks and Maintenance of Standards of Education Act, 1976, the competent authority i.e. the Director, NCC Wing, Ministry of Federal Education and Professional Training (M/o FE&PT) has approved *New National Curriculum of Pakistan (NNCP-2026)* for the subjects of Early Childhood Care and Education (ECCE), English, Urdu, Mathematics, Health & Physical Education, Arts & Crafts, Information and Communication Technology (Grade 1-5), The World Around Us (Grade 1-3) and Social Studies and Science (Grade 4-5).

2. This curriculum shall be implemented in all public and private educational institutions within the Islamabad Capital Territory (ICT) and in educational institutions under the Federal Government across the country w.e.f. academic year 2027-28. These curricula can be downloaded from official website of NCCW at ncc.gov.pk



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