PRESCHOOL MATHEMATICS

Scope & Sequence

Program Level: Preschool
Curriculum Area: Mathematics
Curriculum Components: Teacher Guide + Accompanying Student Book
Primary Focus: Number Sense & Counting • Number Representation • Shapes & Geometry • Colors & Classification • Sequencing • Mathematical Language • Early Reasoning

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EXECUTIVE OVERVIEW

Program Description

Preschool Mathematics builds upon children's introductory mathematical experiences by developing more intentional understanding of **number, quantity, numeral representation, number words, shapes, colors, classification, sequencing, and mathematical relationships**.

Children continue to learn through concrete materials, movement, songs, stories, games, creative experiences, discussion, learning centers, and structured Student Book activities. At Preschool level, however, the curriculum places increased emphasis on children representing what they know.

Children are increasingly expected to:

- recognize mathematical symbols;
- connect numerals with exact quantities;
- trace and write numerals;
- recognize, read, and spell number words;
- place numbers in sequence;
- recognize and describe shapes;
- identify characteristics of shapes;
- read and spell shape and color names;
- match and classify objects;
- apply mathematical concepts in increasingly complex activities; and
- retrieve previously introduced concepts during cumulative review.

The curriculum therefore represents a developmental progression from **experiencing mathematical concepts toward identifying, representing, explaining, and applying them**.

Curriculum Design

Preschool Mathematics follows a recurring learning progression:

Experience → Recognize → Name → Match → Quantify/Classify → Represent → Sequence → Apply → Review

Concepts are initially grounded in concrete experiences before being represented pictorially and symbolically.

For number, children connect:

Quantity ↔ Spoken Number ↔ Written Numeral ↔ Number Word ↔ Number Sequence

For geometry, children connect:

Shape ↔ Name ↔ Attributes ↔ Familiar Objects ↔ Representation

For color, children increasingly connect:

Color ↔ Color Name ↔ Familiar Objects ↔ Classification ↔ Written Color Word

This creates a curriculum in which mathematical vocabulary and symbols become increasingly meaningful because they remain connected to concrete experience.

Scope at a Glance

Strand	Curriculum Scope	Developmental Purpose
Number Sense & Counting	Numbers 0–10; exact quantities; counting objects and actions	Strengthen understanding that numbers represent specific quantities
Number Representation	Numerals, number words, tracing, writing, matching and spelling	Connect quantities with spoken, written and symbolic representations
Number Sequence	Ordering numbers; sequencing 1–5 and 1–10; cumulative 0–10 review	Develop understanding of stable number order
Geometry & Shape	Recognition, naming, tracing, drawing, cutting, constructing and describing familiar shapes	Move from visual recognition toward awareness of geometric characteristics

Color & Classification	Recognition, matching, sorting, correct application, color names and spelling	Extend color recognition into classification and symbolic language
Sorting & Matching	Grouping and matching by color, shape, quantity and other observable characteristics	Develop logical reasoning and attribute-based classification
Mathematical Language	Number words, color words, shape names, quantity and relational vocabulary	Strengthen children's ability to communicate mathematical thinking
Representation & Recording	Drawing, tracing, writing, coloring, matching, constructing and manipulating	Move between concrete, pictorial and symbolic representations
Spatial & Motor Mathematics	Number lines, shape paths, position, movement, direction and left-to-right orientation	Connect mathematical and spatial concepts with physical experience
Reasoning & Problem Solving	Searches, puzzles, matching, sorting, sequencing, guessing, classification and choice	Encourage children to use known information to solve age-appropriate problems

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PROGRESSION FROM NURSERY TO PRESCHOOL

Preschool Mathematics is designed to represent an increased level of mathematical participation compared with Nursery.

Nursery Foundation	**Preschool Development**
Recognize familiar numerals	Recognize, trace and write numerals
Count small quantities	Quantify exact sets through 10
Hear and use number words	Recognize, read, spell and match number words
Experience number order	Sequence increasingly larger sets of numbers
Recognize shapes	Identify, trace, draw, cut, construct and describe shapes
Name familiar colors	Identify, match, classify, read and spell color names

Match familiar objects	Sort and classify according to selected attributes
Participate in patterns and sequences	Apply sequencing and relational thinking more deliberately
Represent through movement and manipulatives	Move among concrete, pictorial and symbolic representations
Respond to simple mathematical questions	Explain choices and respond to increasingly specific mathematical questions

The developmental shift can be summarized as:

Nursery: Experience & Recognize

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Preschool: Represent, Organize & Apply

TEACHER GUIDE + STUDENT BOOK

Teacher Guide

The Teacher Guide provides the **instructional experience** through:

- concept introductions;
- stories and rhymes;
- songs and movement;
- teacher questioning;
- mathematical conversations;
- concrete objects and manipulatives;
- demonstrations;
- sorting and matching;
- games and challenges;
- gross-motor experiences;
- creative activities;
- STEAM connections;
- learning centers; and
- cumulative review.

Student Book

The accompanying Student Book provides opportunities to **record, represent, and apply** concepts introduced through teacher-guided experiences.

Children may:

- trace;
- write;
- count;
- color;
- match;
- draw;
- connect;
- cut;
- paste;
- sort;
- sequence;
- identify;
- discriminate; and
- solve simple visual problems.

Intended Learning Cycle

Concrete Experience → Teacher Modeling → Guided Exploration → Mathematical Discussion → Student-Book Representation → Learning-Center Application → Observation & Review

The Student Book therefore supports mathematical representation and application while the Teacher Guide supplies the broader experiential context.

DETAILED SCOPE & SEQUENCE

STRAND 1 — NUMBER SENSE & COUNTING

Scope

Preschool Mathematics develops number concepts from **zero through ten**.

The inclusion of **zero** represents an important conceptual extension. Children encounter zero not simply as a numeral but as a representation of an empty set or the absence of objects.

The Zero lesson, for example, asks children to identify groups containing zero objects, distinguish empty sets from sets containing objects, form and trace 0, and write and spell the word *zero*.

Number Development

Stage	Mathematical Focus	Children Are Given Opportunities To
Zero	Absence of quantity	Identify 0; recognize empty sets; form and trace 0; connect zero with “none”
1–2	Exact small quantities	Identify numerals; count exact sets; trace/write; spell number words; explore one and pairs
3–5	Expanding quantity and representation	Count collections; connect numeral, quantity and number word; write numerals; represent exact amounts
6–10	Consolidating larger quantities	Count increasingly larger sets; write numerals; match quantities and symbols; apply counting through movement and manipulatives
0–10 Review	Cumulative number understanding	Identify, quantify, match, retrieve and apply numbers and number words across the complete range

The curriculum culminates in explicit **0–10 review**, requiring children to identify numbers, match number symbols and words, quantify amounts, and count actions such as claps, stomps and taps.

STRAND 2 — NUMBER REPRESENTATION

Preschool children encounter number in multiple forms.

Concrete Quantity ↔ Picture Quantity ↔ Spoken Number ↔ Numeral ↔ Number Word

For example, the Number 2 lesson requires children to:

- identify 2;
- quantify 2;
- trace and write 2;
- recognize the word *two*;
- spell *two*;
- identify pairs; and
- perform actions twice.

Later cumulative activities require children to match number symbols, number words, and groups of objects.

Representation Progression

Manipulate → Count → Name → Match → Trace → Write → Spell → Apply

Children therefore learn that a mathematical quantity can be communicated in several different ways.

STRAND 3 — NUMBER WORDS & MATHEMATICAL PRINT

Written mathematical language has a more prominent role at Preschool level.

Children are given repeated opportunities to connect numerals with number words.

The curriculum includes experiences with:

zero • one • two • three • four • five • six • seven • eight • nine • ten

Children may:

- hear number words;
- say number words;
- identify printed number words;
- trace them;
- spell them;
- match them with numerals;
- match them with quantities; and
- use manipulatives or letter tiles to construct them.

A cumulative activity explicitly asks children to read and spell number words **zero through five**, while later lessons extend this work across the 0–10 range.

This represents an intentional integration of mathematics and early literacy.

STRAND 4 — NUMBER SEQUENCE

Number sequencing develops progressively rather than appearing only during final review.

Children experience number order through:

- counting songs;
- number cards;
- movement;
- number paths;
- floor number lines;
- sequencing games;

- numbered puzzles;
- connect-the-number activities; and
- Student Book tasks.

An explicit **Sequencing 1–5** lesson asks children to identify and say 1–5 in order, trace and connect the numbers in sequence, and demonstrate sequencing through movement and games.

Later experiences extend sequencing through **1–10**, including activities in which children count collections and arrange numbered containers in numerical order.

Sequence Progression

Recognize Individual Number → Recall What Comes Next → Order Small Sequence → Order Extended Sequence → Retrieve 0–10

STRAND 5 — GEOMETRY & SHAPE

Scope

Geometry develops beyond simple shape recognition.

Children encounter familiar shapes through:

Recognition → Naming → Tracing → Drawing → Cutting → Constructing → Describing → Classifying → Applying

Shape experiences include familiar two-dimensional forms such as:

Circle • Square • Triangle • Rectangle • Diamond • Oval • Star • Heart

with cumulative shape review appearing later in the curriculum.

Developing Geometric Understanding

Children are given opportunities to:

- identify a target shape;
- name the shape;
- recognize it among alternatives;
- locate examples in familiar objects;
- trace its outline;
- draw or construct it;
- cut shape forms;
- use shapes in art and collage;
- learn and spell shape names;

- notice characteristics such as sides; and
- classify shapes according to observable attributes.

For example, the Circle lesson explicitly describes circles as **round with no sides** and asks children to locate circular components within familiar objects.

The Diamond lesson asks children to identify, spell, trace, cut and construct diamonds and explicitly discusses the diamond as having **four sides**.

The final shape-and-number review further integrates geometry with counting by asking children to **sort shapes according to the number of sides** and count and draw specified numbers of shapes.

STRAND 6 — COLOR & CLASSIFICATION

Scope

Color learning develops from recognition toward **classification, matching, written color vocabulary, and application**.

The curriculum includes:

Red • Blue • Green • Yellow • Purple • Orange • Brown • Black • Pink • White

Children are given opportunities to:

- identify colors;
- name colors;
- recognize familiar objects associated with colors;
- locate colors in the environment;
- match objects by color;
- sort according to color;
- distinguish correct and incorrect color associations;
- trace color names;
- read color names;
- spell color names; and
- apply colors within creative and Student Book activities.

For example, a later lesson explicitly asks children to **read and spell red, blue, green and yellow**, trace the color names, select colored flags, locate colored objects and count items of specified colors.

A subsequent lesson extends the same expectations to **purple, orange, brown, black, pink and white**.

This represents a clear progression beyond basic color identification.

STRAND 7 — SORTING, MATCHING & CLASSIFICATION

Classification is embedded across number, color, shape, and integrated learning experiences.

Children may sort or match according to:

- color;
- shape;
- quantity;
- number symbol;
- number word;
- number of sides;
- size;
- likeness;
- familiar object category; and
- real-world characteristics.

A color-matching lesson, for example, asks children to draw lines between objects with matching colors, sort objects by color, use a color wheel to locate matching objects, and match animal parts according to color.

These experiences develop the ability to attend to a relevant attribute and use it as the basis for a decision.

STRAND 8 — SPATIAL AWARENESS & ORIENTATION

Preschool Mathematics continues to use children's bodies as tools for understanding space and direction.

Experiences include:

- shape walks;
- number paths;
- hopping and jumping;
- movement between numbered positions;
- following trails;
- moving forward;
- locating objects;
- spatial mazes; and
- left-to-right orientation.

The guide contains an explicit **Left to Right Orientation** lesson in which children trace and draw from left to right, run and jump from left to right, and identify pictures in left-to-right order.

Although this lesson also supports pre-reading development, it contributes to spatial and directional understanding within the integrated Preschool program.

STRAND 9 — MATHEMATICAL LANGUAGE

Mathematical language is deliberately integrated throughout the curriculum.

Children encounter and use language related to:

- numbers;
- quantities;
- number words;
- colors;
- shapes;
- sides;
- order;
- position;
- matching;
- sorting;
- size;
- sequence;
- same and different; and
- object characteristics.

Teacher questioning frequently requires children to do more than provide a one-word response.

Children may be asked:

How many do you see?

How do you spell this number?

What shape is this?

How many sides does it have?

Which objects match?

What color is this object?

Which number comes next?

This integration supports children in explaining mathematical observations and using increasingly precise vocabulary.

STRAND 10 — REPRESENTATION & EARLY RECORDING

The curriculum supports movement between three broad representational forms.

Concrete

Children count objects, manipulate counters, sort materials, build shapes, move along number paths, collect objects, and participate in physical games.

Pictorial

Children interpret pictures, match visual quantities, identify shapes and colors, follow picture-based problems, and represent quantities through drawing and coloring.

Symbolic

Children increasingly use:

- written numerals;
- number words;
- color words;
- shape names;
- numeral sequences; and
- traced or independently formed mathematical symbols.

For example, the cumulative number activities ask children to move among quantities, number symbols, and written number words rather than treating each representation separately.

STRAND 11 — REASONING & PROBLEM SOLVING

Preschool mathematical reasoning is embedded in play, games, classification tasks, puzzles, searches and teacher questioning.

Children are given opportunities to:

- determine which set matches a number;
- identify an empty set;
- find a missing or hidden number;
- decide which objects share an attribute;
- sort shapes according to characteristics;

- select an appropriate color;
- determine whether an object has been colored realistically;
- sequence numbers;
- identify what comes next;
- locate shapes within familiar objects; and
- use clues to identify objects.

The goal is not formal written problem solving but developing the habit of **using mathematical information to make a decision**.

CUMULATIVE CURRICULUM PROGRESSION

Preschool Mathematics repeatedly brings previously taught concepts together.

Children increasingly move from performing a single mathematical action to coordinating several.

For example, a later activity may require a child to:

recognize a numeral + count a quantity + identify a shape + apply a color + follow a sequence

The final review activities explicitly integrate domains.

The **Review Shapes and Numbers** lesson asks children to count and draw shapes, sort shapes by number of sides, color shapes according to numbers, sequence numbered puzzle pieces and count steps between shapes.

The curriculum can therefore be described as following a cumulative progression:

Introduce → Experience → Represent → Practice → Retrieve → Combine → Apply → Review

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CROSS-CURRICULAR INTEGRATION

The Preschool Mathematics Teacher Guide includes learning experiences that connect mathematics with other curriculum areas.

Developmental Area	Curriculum Connections
Cognitive Development	Counting, quantifying, sequencing, matching, classification, memory and problem solving
Language & Early Literacy	Number words, color words, shape names, spelling, oral explanations, stories and teacher questioning
Fine-Motor Development	Writing, tracing, cutting, drawing, coloring, gluing and manipulating

	small objects
Gross-Motor Development	Hopping, jumping, running, number paths, shape walks and movement games
Social-Emotional Development	Turn-taking, group games, cooperation, personal preferences and classroom participation
Creative Development	Painting, collage, construction, crafts, music and movement
STEAM & Discovery	Shape construction, color exploration, sorting, observation, spatial relationships, materials and real-world investigations
Science & Knowledge of the World	Animals, habitats, food, nature, health, familiar objects and environmental observation

Some Teacher Guide topics are explicitly categorized as Science, Art, Literacy/Pre-Reading or other integrated areas rather than Mathematics. For example, **Animals and Their Homes** is identified as Preschool Science and develops matching and sorting alongside animal-habitat knowledge.

These experiences demonstrate the integrated nature of the Preschool curriculum rather than indicating that every topic is intended as a standalone mathematics lesson.

TEACHING & LEARNING ENVIRONMENT

The Teacher Guide supports learning through recurring classroom centers.

Mathematics & Manipulatives

Counting, number matching, number cards, counters, sorting, puzzles, sequencing and number construction.

Writing & Fine Motor

Numeral tracing, number-word practice, shape drawing, cutting, play dough and whiteboard activities.

Shapes & Construction

Shape building, collage, craft sticks, blocks, puzzles and classification.

Color & Art

Color matching, sorting, painting, color-word activities and creative representation.

Sensory Exploration

Sand, rice bins, sensory bags, dough and tactile mathematical forms.

Movement & Music

Counting songs, number paths, hopping, jumping, rhythmic counting and shape movement.

STEAM & Discovery

Construction, classification, observation, color exploration, spatial problems and real-world applications.

These centers provide repeated opportunities to revisit concepts beyond whole-group instruction.

OBSERVABLE EVIDENCE OF LEARNING

Assessment within Preschool Mathematics is best understood as ongoing observation of children's increasingly independent mathematical behaviors.

Teachers can observe whether children increasingly:

- recognize numerals 0–10;
- count collections accurately within the taught range;
- match numerals to exact quantities;
- recognize an empty set as zero;
- trace and write familiar numerals;
- recognize and use number words;
- place familiar numbers in sequence;
- identify and name familiar shapes;
- notice characteristics such as sides;
- trace, draw, cut or construct familiar shapes;
- identify and name taught colors;
- match and sort according to color;
- recognize familiar written color names;
- classify objects according to a specified attribute;
- follow positional and directional instructions;
- use mathematical vocabulary;
- explain simple mathematical choices;
- solve age-appropriate matching, sorting and sequencing tasks; and
- transfer previously taught concepts into new activities.

These behaviors provide evidence of development rather than serving as rigid pass/fail criteria.

END-OF-BOOK LEARNING PROFILE

By completion of Preschool Mathematics, children have been provided with opportunities to develop mathematical understanding across the following areas.

Number Sense

Recognize, count, quantify and work with numbers **0 through 10**.

Number Representation

Connect quantities with spoken number names, written numerals and number words and develop increasing control in tracing and writing numerals.

Number Sequence

Order familiar numbers and participate in sequencing experiences extending through the taught 0–10 range.

Geometry

Recognize, name, trace, draw, cut, construct and classify familiar two-dimensional shapes and begin noticing attributes such as sides.

Color & Classification

Recognize and use taught colors, match and classify according to color, and develop familiarity with written color names.

Sorting & Relationships

Organize objects according to observable attributes and recognize similarities, differences and matching relationships.

Mathematical Communication

Use increasingly specific vocabulary to describe number, quantity, shape, color, position and sequence.

Mathematical Representation

Move among concrete objects, pictures, spoken language, written words and mathematical symbols.

Reasoning & Problem Solving

Use mathematical information to make choices during age-appropriate puzzles, sorting activities, matching tasks, sequencing games, searches and classification experiences.

DEVELOPMENTAL POSITION WITHIN THE PROGRAM

The progression from Nursery to Preschool can be summarized as:

NURSERY

Experience → Recognize → Name

↓

PRESCHOOL

Recognize → Represent → Organize → Apply

↓

KINDERGARTEN

To be determined from the Kindergarten Teacher Guide

This progression should remain evidence-based.

CURRICULUM OUTCOME STATEMENT

Preschool Mathematics develops children's ability to move from **concrete mathematical experience toward increasingly intentional mathematical representation and reasoning**.

Children strengthen number sense by connecting quantities, spoken numbers, written numerals and number words. They extend geometric understanding by identifying, constructing and describing shapes. They use color and other attributes to match and classify objects, develop number sequencing, and communicate mathematical observations using increasingly specific vocabulary.

Through movement, manipulatives, discussion, creative activities, Student Book tasks and cumulative review, children learn that mathematics can be **seen, touched, spoken, represented, organized and applied**.

The Preschool curriculum therefore provides a bridge between the highly experiential mathematical foundation of Nursery and the more advanced mathematical thinking expected at the Kindergarten level.

PROGRAM CONTINUITY

Preschool Mathematics represents the second developmental mathematics level within the early-years curriculum sequence.

When viewed alongside Nursery Mathematics, the progression becomes increasingly visible:

Nursery Mathematics
Concrete exploration and foundational recognition

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Preschool Mathematics
Representation, classification, sequencing and application

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Kindergarten Mathematics — Integration & Mastery

Kindergarten Mathematics represents the culminating stage of the Mastery Series Mathematics curriculum, building on the foundational learning introduced in Nursery and developed through Preschool.

The program extends number understanding through 0–20, with additional counting experiences to 100. Children develop increasingly sophisticated mathematical skills involving number representation, sequencing, comparison, patterns, geometry, classification, measurement, ordinal numbers, time, money, early addition, and mathematical reasoning.

Across the complete three-level curriculum, major mathematical strands progress through:

Nursery → Preschool → Kindergarten

- **Nursery — Foundation:** Experience, recognize, name, match, count, and explore mathematical concepts.
- **Preschool — Development & Application:** Strengthen number understanding through counting, representation, sorting, classification, sequencing, and application.
- **Kindergarten — Integration & Mastery:** Extend mathematical understanding through comparison, ordering, measurement, early addition, problem solving, and reasoning.

The complete Mathematics Scope & Sequence demonstrates how concepts are **introduced, developed, reinforced, and extended** across the three levels, providing school administrators and curriculum-selection committees with a clear understanding of the program's coherence, developmental progression, and continuity.

At least one explicit production correction is already contained within the Teacher Guide: the **Oval Shape** lesson states that a page instruction pointing to page 75 should instead point to page 79.

One significant improvement over the Nursery program is the explicit **Nursery → Preschool progression table**. I recommend keeping this feature in every Preschool and Kindergarten Scope & Sequence. It gives curriculum buyers something especially useful: evidence that the books form a **developmental program rather than six unrelated activity books**.

The source strongly supports that distinction. Preschool progresses to zero as an empty quantity, written number words, numeral writing, 1–5 and 1–10 sequencing, cumulative 0–10 matching and quantification, written color names, geometric attributes such as sides, and integrated shape-number classification. MASTER-Preschool-Mathematics MASTER-Preschool-Mathematics MASTER-Preschool-Mathematics MASTER-Preschool-Mathematics

This presentation also fits the broader early-mathematics literature, which commonly organizes preschool mathematical development around **number/counting, geometry/spatial thinking, measurement, patterns, classification, and learning progressions**, while maintaining active and concrete experiences. Relevant sources include *Alsina, Á., & Berciano, A. (2020). Developing informal mathematics in early childhood education. Early Child Development and Care. Link*; *O'Dwyer, L. (2021). Teaching and Learning Early Year's Mathematics in Irish Preschools. Link*; *Giblin, F., Butler, D., & Kingston, M. (2022). Numeracy and digital learning: use of digital technologies as tools for numeracy development. Link*; *Namkung, J. M., Peng, P., Goodrich, J. M., et al. (2019). Exploring growth trajectories of informal and formal mathematics skills among prekindergarten children struggling with mathematics. Learning Disability Quarterly. Link*; *Reuter, D., & Reinhold, F. (2026). Identifying stages of pattern recognition: Evidence for a hierarchical stage model. Frontiers in Education. Link*; *Chen, J. (2026). A systematic review of using tablet games to promote early math learning in preschool settings: effectiveness and influencing factors. Educational Technology Research and Development. Link*; *Demiray, S., & Koştur, M. (2026). A systematic review of research on geometric thinking: Publication trends and methodological profiles (2018–2024). International Electronic Journal of Mathematics Education. Link*; and *Chan, J. Y. C., Yip, S. H. K., Tsang, S. Y. M., & Lee, K. (2026). Early childhood mathematics: Culturally situated pedagogies in Hong Kong. Link*.