


1st Grade American Online School

MATHEMATICS CURRICULUM

Counting, Calculating, and Recognizing Patterns



Version May/2025

1. Introduction

The Role of Mathematics Education in 1st Grade

In 1st grade, mathematics helps children build confidence with numbers and develop logical thinking through hands-on exploration and play. Students learn to count, add, subtract, sort, and recognize patterns. They work with shapes, solve basic problems, and express mathematical thinking using drawings, models, and verbal explanations.

By the end of this course, students will:

- ✓ Read, write, and compare numbers up to 20 (and beyond).
 - ✓ Perform basic addition and subtraction within 20 using objects, drawings, and number lines.
 - ✓ Recognize and create repeating patterns and basic shapes.
 - ✓ Apply math to real-world contexts (shopping, time, measurement).
 - ✓ Build mathematical vocabulary and communicate ideas clearly.
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2. Core Competence Areas

MTH.1 Numbers and Counting – “Numbers to 1” and “Numbers to 20”

Learning Outcomes

By the end of this course, students will be able to:

- ✓ Count forward and backward to 20 (and higher for challenge).
- ✓ Read and write numerals and match them with quantities.
- ✓ Use number lines and tens frames to visualize quantities.

Competencies

MTH.1.A.1 – Building early number sense

- Count with objects, fingers, and rhythmic chants.
- Play number match-up and “show me” games with dice and cards.

MTH.1.A.2 – Comparing and ordering numbers

- Use symbols ($<$, $>$, $=$) to compare quantities.
 - Order numbers from least to greatest using manipulatives.
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MTH.2 First Arithmetic – “First Calculations” and “Calculations to 20”

Learning Outcomes

By the end of this unit, students will be able to:

- ✓ Add and subtract within 10 fluently, and to 20 with support.
- ✓ Use pictures, counters, and fingers to solve problems.
- ✓ Recognize the relationship between addition and subtraction.

Competencies

MTH.2.A.1 – Performing basic operations

- Act out stories with joining and taking away.
- Draw addition and subtraction number stories.

MTH.2.A.2 – Translating math into visual and written form

- Use number sentences (e.g., $7 + 2 = 9$).
- Use ten-frames, unifix cubes, and number bonds to show solutions.

MTH.3 Shapes and Visual Patterns – “Shapes and Patterns”

Learning Outcomes

By the end of this unit, students will be able to:

- ✓ Identify and describe 2D shapes (circle, square, triangle, rectangle).
- ✓ Recognize and extend repeating patterns.
- ✓ Sort shapes and objects by size, color, and other attributes.

Competencies

MTH.3.A.1 – Exploring geometry through touch and sight

- Build shapes using straws, clay, or paper.
- Sort and classify real-world items (e.g., coins, buttons, blocks).

MTH.3.A.2 – Creating and analyzing patterns

- Clap, draw, or color patterns (AB, ABB, AAB).
- Design art projects with color and shape repetition.

MTH.4 Addition and Subtraction Foundations – “Plus and Minus”

Outcomes

By the end of this unit, students will be able to:

- ✓ Use plus (+) and minus (–) correctly in context.
- ✓ Represent joining and separating groups with symbols.
- ✓ Check and explain their work with drawings or models.

Competencies

MTH.4.A.1 – Understanding addition as “putting together”

- Use manipulatives to act out addition stories.
- Build number towers with cubes for each sum.

MTH.4.A.2 – Understanding subtraction as “taking away” or “finding the difference”

- Use erasers, playdough, or crossing-out strategies.
- Practice subtraction on number lines and with picture stories.

3. Assessment and Evaluation

Formative Assessments – Daily Practice and Feedback

- ✓ Counting warm-ups and math journal entries.
- ✓ Quick checks during partner work and stations.
- ✓ “Show What You Know” mini challenges.

Summative Assessments – Performance and Problem Solving

- ✓ End-of-unit math check-ins (story problems, number sense tasks).
- ✓ Visual math posters (e.g., “All About 12!”).
- ✓ Simple timed fluency games for addition facts.

Authentic Assessment – Applied Math and Creativity

- ✓ Cooking and measuring projects (e.g., fruit salad math).
 - ✓ Real-life math roleplays (e.g., pretend store, classroom budget).
 - ✓ Peer math sharing circle.
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4. Instructional Strategies for Online Learning

Concrete–Pictorial–Abstract (CPA) Framework

- ✓ Always begin with physical materials → draw or visualize → then use numbers.
- ✓ Reinforce learning through hands-on math centers.

Math Talk and Language Development

- ✓ Encourage full-sentence math talk (“I added 4 and 3 because…”).
- ✓ Use storybooks and songs to teach math vocabulary.

Joyful and Inclusive Engagement

- ✓ Celebrate growth over speed.
- ✓ Encourage partner games and small-group explorations.
- ✓ Highlight different strategies and thinking paths.