


# 2nd Grade American Online School

## MATHEMATICS CURRICULUM

### Numbers, Patterns, and Everyday Problem Solving



Version May/2025

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## 1. Introduction

### The Role of Mathematics Education in 2nd Grade

The 2nd Grade Math curriculum nurtures foundational number sense, builds fluency in addition and subtraction, and introduces geometric thinking and financial literacy. Students explore math through hands-on activities, visual models, games, and real-life applications. Emphasis is placed on explaining thinking, discovering patterns, and developing efficient strategies.

By the end of this course, students will:

- ✓ Add and subtract within 100 using strategies and mental math.
  - ✓ Identify even and odd numbers and apply skip counting patterns.
  - ✓ Recognize coins, bills, and solve simple money problems.
  - ✓ Analyze and build shapes, identify patterns, and explore geometry in real life.
  - ✓ Compare, model, and solve real-world problems using math reasoning.
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## 2. Core Competence Areas

### MTH.1 Number Sense and Operations

#### Learning Outcomes

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

- ✓ Use place value understanding to add and subtract within 100.
- ✓ Use tools like number lines, base-ten blocks, and fact families.
- ✓ Understand part-part-whole relationships in math sentences.

#### Competencies

##### MTH.1.A.1 – Adding and subtracting fluently within 100

- Apply mental math, drawing models, and place value for computation.
- Practice story problems and fact fluency games.

##### MATH.1.A.2 – Comparing numbers and exploring magnitude

- Use symbols ( $>$ ,  $<$ ,  $=$ ) and build number lines to compare values.
- Explain thinking using pictures and math talk.

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### MTH.2 Patterns and Structure

#### Learning Outcomes

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

- ✓ Identify and extend repeating and growing patterns.
- ✓ Recognize patterns in number sequences and shapes.
- ✓ Apply pattern thinking to skip counting and estimation.

#### Competencies

##### MTH.2.A.1 – Observing and continuing patterns

- Complete visual and numerical patterns using logic.
- Build pattern towers or bracelets and describe rules.

### **MTH.2.A.2 – Applying even/odd concepts in problem solving**

- Sort numbers as even or odd and explain using models.
  - Use counters or arrays to prove number types.
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## **MTH.3 Geometry and Spatial Understanding**

### **Learning Outcomes**

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

- ✓ Identify and describe basic 2D and 3D shapes.
- ✓ Understand attributes such as sides, angles, edges, and faces.
- ✓ Create and combine shapes in art and design projects.

### **Competencies**

#### **MTH.3.A.1 – Naming and analyzing shapes**

- Classify shapes by attributes (e.g., number of sides or vertices).
- Draw and describe composite shapes using pattern blocks or tangrams.

#### **MTH.3.A.2 – Exploring geometry in the environment**

- Search for real-life examples of shapes in architecture and nature.
  - Map classroom layouts and label objects by shape category.
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## **MTH.4 Financial Literacy – Money Learning**

### **Outcomes**

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

- ✓ Identify and count coins and bills.
- ✓ Solve real-world money problems with addition and subtraction.
- ✓ Make change using simple transactions.

## Competencies

### MTH.4.A.1 – Recognizing and counting money

- Use coin cards and play store scenarios to identify values.
- Build coin collections that match set amounts.

### MTH.4.A.2 – Using money in everyday math tasks

- Solve word problems involving purchases, savings, and change.
  - Play classroom economy games to budget and spend.
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## MTH.5 Foundational Mastery – Check What You Know

### Learning Outcomes

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

- ✓ Review and apply skills from each major domain.
- ✓ Self-reflect on growth and set goals for improvement.
- ✓ Apply knowledge flexibly across new challenges.

## Competencies

### MTH.5.A.1 – Synthesizing learning across strands

- Complete math missions and spiral review challenges.
- Demonstrate understanding through multi-step problems and partner tasks.

### MTH.5.A.2 – Reflecting on math learning and strategies

- Use journals or video recordings to explain personal strategies.
  - Track progress with “I Can” checklists and math passports.
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### 3. Assessment and Evaluation

#### Formative Assessments – Daily Practice and Journaling

- ✓ Math warm-ups and number talks.
- ✓ Exit tickets and “Today I Learned...” reflections.
- ✓ Peer pair-share with math sentence stems.

#### Summative Assessments – Projects and Performance Tasks

- ✓ Shape Identification Assessment + Geometric Artwork.
- ✓ Money Counting Challenge and Store Project.
- ✓ Math story problems with diagrams and explanations.

#### Authentic Assessment – Application and Mastery

- ✓ Class economy activity with budgeting and saving.
  - ✓ Math Missions Portfolio + Student “Strategy Spotlight” Presentations.
  - ✓ End-of-year “Mathemagician” Mastery Quiz Show.
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### 4. Instructional Strategies for Online Learning

#### Hands-On and Visual Learning

- ✓ Use math manipulatives, visuals, and games.
- ✓ Integrate technology through apps and interactive whiteboards.

#### Story-Based and Real-Life Math

- ✓ Connect math to food, shopping, nature, and classroom routines.
- ✓ Read math literature and solve problems as characters.

#### Empowered Math Mindset

- ✓ Encourage growth mindset phrases: “I’ll try another way,” “Mistakes help me learn”.
- ✓ Celebrate effort, creativity, and strategy over just answers.