

CURRICULUM

GUIDE

Math – Grade 3

Providence
Schools

QUARTER I

Content students have to learn

Processes students will learn and use

Unit 1.1 – Comparing and Ordering Numbers (11 days)

- Understand rational numbers from 0 to 999 using models, explanations, and representations.
- Demonstrate understanding of the magnitude of a number by comparing and ordering numbers to benchmark whole numbers.
- Compose and decompose numbers in different ways without changing the values.
- Solve decimal problems in the context of money.
- Solve problems involving combinations using a variety of strategies.

- » Translate results of a computation into solutions that fit the real-world problem.
- » Determine the reasonableness of solutions to real-world problems.
- » Communicate by explaining, justifying, and representing using different models.
- » Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.

Unit 1.2 – Adding Two-Digit and Three-Digit Numbers (14 days)

- Solve problems involving addition.
- Estimate sums in a given situation.
- Mentally add and subtract multiples of 10 and 100.
- Understand and apply commutative and associative properties of addition.
- Understand equality by finding the value that will make an open sentence true.

- » Determine the reasonableness of solutions to real-world problems.
- » Generalize solutions and apply strategies to new problem situations.
- » Recognize, explore, and develop mathematical connections and link concepts and procedures.

Unit 1.3 – Developing Number Sense for Subtraction (8 days)

- Understand the inverse relationship between addition and subtraction.
- Understand that joining, separating, part-part-whole, or comparison problems can be solved using subtraction.
- Write number sentences that help express problem-solving solutions.
- Develop number sense and mental math strategies for subtraction.
- Understand and use equivalency to solve problems.
- Estimate a difference using various strategies.

- » Expand repertoire of problem-solving strategies mentally and on paper.
- » Demonstrate an understanding of mathematical concepts and relationships through a variety of methods.
- » Link concepts and procedures.
- » Determine reasonableness of solutions.

Unit 1.4 – Subtracting Whole Numbers to Solve Problems (9 days)

- Connect conceptual understanding to algorithms.
- Apply commutative and associative properties for addition to solve problems.
- Understand how to use various strategies for subtracting two- and three-digit numbers.
- Evaluate the reasonableness of solutions and select the appropriate method involving a subtraction situation.

- » Determine the reasonableness of solutions to real-world problems.
- » Generalize solutions and apply strategies to new problem situations.
- » Demonstrate an understanding of mathematical concepts and relationships through a variety of methods (e.g., writing, graphing, and number sentences).

QUARTER 2

Content students have to learn

Processes students will learn and use

Unit 2.1 – Understanding and Developing Multiplication (12 days)

- Understand the relationship between multiplication and repeated addition using models, number lines, or explanations.
- Accurately solve real-world problems involving multiplication.
- Apply and use the multiplicative property of zero, identity property for multiplication, and commutative property of multiplication to solve problems.

- » Translate results of a computation into solutions that fit the real-world problem.
- » Demonstrate an understanding of mathematical concepts and relationships through a variety of methods.
- » Use physical models and diagrams to represent important mathematical ideas.

Unit 2.2 – Developing Strategies for Multiplication (9 days)

- Accurately solve problems involving the concept of multiplication using models and explanations.
- Use the associative property of multiplication, commutative property of multiplication, and distributive property of multiplication to solve problems.
- Understand equivalence between two expressions using models or different representations of the expressions.

- » Gain more problem-solving strategies and use those strategies in more complex ways.
- » Use models and known facts to explain thinking and demonstrate an understanding of important mathematical concepts.
- » Recognize relationships among different topics in mathematics.

Unit 2.3 – Identifying and Extending Patterns (10 days)

- Identify and extend linear and non-numeric patterns using models, tables, or sequences.
- Extend tables of ordered pairs for situations involving multiplication, addition, and subtraction.
- Extend patterns of cubes or tiles (models) to the next one to three elements.
- Determine equivalence between two expressions using models or different representations.

- » Draw logical conclusions and make generalizations using deductive and inductive reasoning.
- » Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.
- » Use appropriate representations to solve problems or to portray, clarify, or extend a mathematical idea.

Unit 2.4 – Identifying and Classifying Solids and Shapes (9 days)

- Use properties or attributes of angles and sides to identify, describe, or distinguish among polygons.
- Develop understanding of congruency, composing, and decomposing two- and three-dimensional objects using models or explanations.
- Develop conceptual understanding of spatial reasoning by copying, comparing, and drawing models of polygons and circles.
- Build models of rectangular prisms to demonstrate conceptual understanding of congruency.

- » Recognize the pervasive use and power of reasoning as part of mathematics.
- » Use physical models and diagrams to represent important ideas.
- » Recognize and use mathematics in other curriculum areas and in daily life.

QUARTER 2

Content students have to learn

Processes students will learn and use

Unit 2.5 – Identifying Congruency and Symmetry (8 days)

- Use translations, reflections, and rotations to determine if two figures are congruent.
 - Identify congruent figures by using line symmetry within a shape.
 - Understand the difference between congruence and similarity.
 - Develop conceptual understanding of similarity by identifying similar shapes.
- » Add to the repertoire of problem-solving strategies (e.g., looking for similar problems) and use those strategies in more sophisticated ways.
 - » Generalize solutions and apply strategies to new problem situations.
 - » Solve problems with multiple solutions and recognize when a problem has no solution.

QUARTER 3

Content students have to learn

Processes students will learn and use

Unit 3.1 – Understanding Fractions (12 days)

- Understand the part-to-whole relationship in area and set models for benchmark fractions (halves, thirds, quarters, sixths, and eighths).
- Identify equivalent positive fractions using models, number lines, or explanations.
- Compare equivalent positive fractions using models, number lines, or explanations.
- Identify and extend linear and non-numeric patterns represented in models, tables, or sequences.
- Record and organize data in a problem-solving situation.

- » Use models and relationships to explain thinking and justify answers.
- » Use physical models and diagrams to represent important mathematical ideas.

Unit 3.2 – Using Money to Understand Decimals (8 days)

- Develop conceptual understanding of decimals within a context of money using models, explanations, and other representations.
- Solve problems involving addition and subtraction of decimals.
- Solve problems involving addition and subtraction of numbers with regrouping.
- Mentally add and subtract whole numbers using multiples of 10 and 100.
- Find solutions to problems with missing data and recognize when extra data are not needed to solve the problem.

- » Solve problems with multiple solutions, recognize when a problem has no solution, and recognize problems where more information is needed.
- » Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.
- » Use physical models and diagrams to represent important mathematical ideas (e.g., multiplication).
- » Recognize equivalent representations of concepts and procedures and translate among them as appropriate (for example, understand how the addition of whole numbers, fractions, and decimals is related).

Unit 3.3 – Measuring and Estimating Customary Units of Length, Capacity, and Weight (8 days)

- Measure and use units of length (inch, foot, yard) in problem situations.
- Use appropriate units of capacity and weight to solve problems.
- Convert units among inches, feet, and yards in problem situations.

- » Determine the reasonableness of solutions to real-world problems.
- » Translate results of a computation into solutions that fit the real-world problem. (e.g., when a computation shows that you need 3.2 gallons of paint to paint a room, how much paint do you buy?)
- » Recognize the pervasive use and power of reasoning as part of mathematics.

Unit 3.4 – Review Addition and Subtraction (4 days)

- Mentally add and subtract whole number facts through 20.
- Mentally add and subtract numbers that are multiples of 10.
- Accurately solve problems involving addition and subtraction with regrouping.
- Demonstrate understanding of the relative magnitude of numbers by comparing whole numbers to benchmark whole numbers in the hundreds.

- » Recognize the pervasive use and power of reasoning as a part of mathematics.
- » Demonstrate an understanding of mathematical concepts and relationships through a variety of methods.

Content students have to learn

Processes students will learn and use

Unit 4.1 – Measuring and Estimating Metric Units of Length, Capacity, and Mass (7 days)

- Measure objects in centimeters (accurate to the nearest whole centimeter).
- Measure objects in meters (accurate to the nearest whole centimeter).
- Use units of measure appropriately (i.e., centimeter, meter, gram, kilogram).
- Make conversions within systems when solving problems.
- Identify and extend linear and non-numeric patterns represented in tables, models, or sequences.

- » Draw conclusions and solve problems using elementary deductive reasoning and reasoning by analogies.
- » Understand and appreciate the economy and power of mathematical symbolism and its role in the development of mathematics.
- » Recognize and use mathematics in other curriculum areas and in daily life.

Unit 4.2 – Understanding and Finding Perimeter and Area of Shapes (10 days)

- Understand the concept of perimeter of polygons using models or manipulatives.
- Use concrete and pictorial models of square units to determine the area of rectangles.
- Express all measures of perimeter and area using the appropriate units.

- » Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.
- » Use appropriate representations to solve problems or to portray, clarify, or extend a mathematical idea.
- » Recognize relationships among different topics in mathematics.

Unit 4.3 – Using Data in Graphs and Probability (14 days)

- Give directions from one location to another on a map or coordinate grid using words or compass directions.
- Interpret line plots, tally charts, tables, or bar graphs to answer questions and make predictions.
- Organize and display data using tables, tally charts, and bar graphs to formulate conclusions and solve problems.
- Describe events as *likely*, *unlikely*, *impossible*, or *certain* to determine outcomes.
- Collect, organize, and display data to answer questions or draw conclusions.
- Solve problems involving simple permutations using an organized list.

- » Recognize and use mathematics in other curriculum areas and in daily life.
- » Use mathematical skills, concepts, and applications in other disciplines (e.g., graphs in social studies, patterns in art or music, and geometry in technology education).
- » Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.

Unit 4.4 – Measuring Time and Temperature (8 days)

- Tell time to the hour (to the 5-minute interval).
- Find elapsed time in problem situations.
- Solve problems involving conversions using equivalent units of time (such as 24 hours in 1 day, 7 days in a week).
- Read a thermometer to within one degree, using both Celsius and Fahrenheit.

- » Recognize and use mathematics in other curriculum areas and in daily life.
- » Recognize the pervasive use and power of reasoning as a part of mathematics.
- » Translate results of a computation into solutions that fit the real-world problem (e.g., when a computation shows that one needs 3.2 gallons of paint to paint a room, how much paint do you buy?).

QUARTER 4

Content students have to learn

Processes students will learn and use

Unit 4.5 – Relating Multiplication and Division (6 days)

- Understand the inverse relationship between multiplication and division.
 - Write related number sentences based on the “family of facts” or inverse relationships between multiplication and division.
 - Identify the quotients for division facts with divisors of 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.
- » Use physical models and diagrams to represent important mathematical ideas (e.g., multiplication).
 - » Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.

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