Readington Township Public Schools

Grade 2 Math

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I.   OVERVIEW

Readington Township Public Schools' K-5 mathematics curriculum provides students with a strong foundation in mathematics content while promoting and instilling the skills of problem solving, communication in mathematics, making mathematical connections, and reasoning. Throughout the delivery of the K-5 mathematics program, various tools and technology are employed, including manipulatives, calculators, software, apps, videos, websites, and computing devices (computers, tablets, smart phones, interactive whiteboards, etc.). A strong focus of the program in on promoting high levels of mathematical thought through experiences which extend beyond traditional computation.

The second grade Math Expressions mathematical program is directly correlated to the NJ Core Curriculum Content Standards, designed to cover the topics of operations and algebraic thinking, number and operations in base ten, measurement and data analysis, and geometry while promoting and instilling the skills of problem solving and strategies, communication in mathematics, and making mathematical connections. Students will use various tools and technology in the process, including manipulatives, websites and calculators to better enhance their understanding of the concepts being taught. A significant part of the collaborative classroom's mathematical culture is the frequent exchange of mathematical ideas and problem-solving strategies through student discussions or "Math Talk".

II.   STUDENT OUTCOMES (Linked to New Jersey Core Curriculum Standards/Common Core Mathematics)

OPERATIONS AND ALGEBRAIC THINKING
Represent and solve problems involving addition and subtraction.
CCSS.MATH.CONTENT.2.OA.A.1
Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]

Add and subtract within 20.
CCSS.MATH.CONTENT.2.OA.B.2
Fluently add and subtract within 20 using mental strategies.[2] By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with equal groups of objects to gain foundations for multiplication.
CCSS.MATH.CONTENT.2.OA.C.3
Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

CCSS.MATH.CONTENT.2.OA.C.4
Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

NUMBER AND OPERATIONS IN BASE TEN
Understand place value.
CCSS.MATH.CONTENT.2.NBT.A.1
Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
CCSS.MATH.CONTENT.2.NBT.A.1.A
100 can be thought of as a bundle of ten tens — called a "hundred."

CCSS.MATH.CONTENT.2.NBT.A.1.B
The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

CCSS.MATH.CONTENT.2.NBT.A.2
Count within 1000; skip-count by 5s, 10s, and 100s.

CCSS.MATH.CONTENT.2.NBT.A.3
Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

CCSS.MATH.CONTENT.2.NBT.A.4
Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.
CCSS.MATH.CONTENT.2.NBT.B.5
Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

CCSS.MATH.CONTENT.2.NBT.B.6
Add up to four two-digit numbers using strategies based on place value and properties of operations.

CCSS.MATH.CONTENT.2.NBT.B.7
Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

CCSS.MATH.CONTENT.2.NBT.B.8
Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.

CCSS.MATH.CONTENT.2.NBT.B.9
Explain why addition and subtraction strategies work, using place value and the properties of operations.

Measure and estimate lengths in standard units.

CCSS.MATH.CONTENT.2.MD.A.1
Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

CCSS.MATH.CONTENT.2.MD.A.2
Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

CCSS.MATH.CONTENT.2.MD.A.3
Estimate lengths using units of inches, feet, centimeters, and meters.

CCSS.MATH.CONTENT.2.MD.A.4
Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.
CCSS.MATH.CONTENT.2.MD.B.5
Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

CCSS.MATH.CONTENT.2.MD.B.6
Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Work with time and money.
CCSS.MATH.CONTENT.2.MD.C.7
Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
CCSS.MATH.CONTENT.2.MD.C.8
Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Represent and interpret data.
CCSS.MATH.CONTENT.2.MD.D.9
Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

CCSS.MATH.CONTENT.2.MD.D.10
Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems[1]using information presented in a bar graph.

Reason with shapes and their attributes.

CCSS.MATH.CONTENT.2.G.A.1
Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[1] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

CCSS.MATH.CONTENT.2.G.A.2
Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

CCSS.MATH.CONTENT.2.G.A.3
Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

III. **ESSENTIAL QUESTIONS AND CONTENT**
Unit 1 – Strategies for Addition and Subtraction Within 20
How do subtraction and addition relate to one another?
How do we use and understand numbers in our daily lives?

Unit 2 – Addition Within 200
How do we represent larger numbers?
What computation tools should I use when adding large numbers?
How do I know how much money I have or how much something costs?

Unit 3 – Length and Shapes
What are tools of measurement and how are they used?
How do I draw a shape when I'm given certain attributes to use?
When is an estimate more appropriate than an actual measurement?

Unit 4 – Subtract 2-Digit Numbers
What are efficient methods for finding differences?
How does the position of a digit in a number affect subtraction problems?
How can I use what I know about money, addition, and subtraction to know how much money I have?

Unit 5 – Time, Graphs, and Word Problems
What time is it when certain things happen during one day?
How can I show information that I have collected?

Unit 6 – Three-Digit Addition and Subtraction
How do strategies assist in more efficient and accurate computation?
What computation tools are best suited to which circumstances?

Unit 7 – Arrays, Equal Shares, and Adding or Subtracting Lengths
Can I use patterns to help me understand larger numbers?
Can I use patterns to help me understand equal parts?
How is measuring like using a number line?

IV. **STRATEGIES**

Strategies may include but are not limited to:
Teacher Presentation
Daily Routines
Math Talk (solve, explain, question, and justify)
Student Pairings
Scenarios to Act Out
Small Group Instruction

V. **EVALUATION**
Assessments may include but are not limited to:
Teacher Observations
Homework Assignments
Quick Quizzes
Performance Assessments
Anecdotal Records
Unit Assessments
End of the Year Test
NWEA Testing (Fall and Winter assessments)
Student Collaboration-"Math Talk"(the frequent exchange of mathematical ideas and problem solving strategies)

V.   **REQUIRED RESOURCES**
Math Expressions Common Core by Dr. Karen Fuson; Published by Houghton Mifflin Harcourt
Homework and Remembering- Books 1 and 2
Student Activity Book
Activity Cards for Differentiated Instruction
Math Center Challenge
Assessment Guide
Teacher's Resource Book

Supplemental Materials
Brain Pop
IXL Math
Reflex Math
Grade 2 Unpacked Standards Document: Click here to access the document.

VI.   **SCOPE AND SEQUENCE**
Unit 1 – Strategies for Addition and Subtraction Within 20 (30 days)
Strategies for Addition and Subtraction
Addition and Subtraction Word Problems
Complex Word Problems (multi-step, missing information, etc.)

Unit 2 – Addition Within 200 (25 days)
Using Place Value
Add 2-Digit Numbers
Money and Fluency for Addition with 100

Unit 3 – Length and Shapes (16 days)
Measuring Length
Recognizing and Drawing Shapes
Estimate and Measure with Centimeters and Inches
Make Line Plots from Measurements

Unit 4 – Subtract 2-Digit Numbers (32 days)
Totals of Mixed Coins and Bills
Multi-digit Subtraction Strategies
Word Problems using Addition and Subtraction within 100

Unit 5 – Time, Graphs, and Word Problems (20 days)
A.M. and P.M. Concepts
Time to Five Minutes
Read, Make, and Problem-solve with Bar Graphs

Unit 6 – Three-Digit Addition and Subtraction (22 days)
Understanding Numbers to 1,000
Adding to 1,000
3-Digit Addition and Subtraction

Unit 7 – Arrays, Equal Shares, and Adding or Subtracting Lengths (20 days)
Arrays and Equal Shares
Relate Addition and Subtraction to Length with Number Lines and Actual Measurements