

Readington Township Public Schools

First Grade Mathematics

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Readington Township Public Schools

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First Grade Mathematics

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, interactive whiteboards, etc.). A strong focus of the program is on promoting high levels of mathematical thought through experiences that extend beyond traditional computation.

In Grade 1, instructional time focuses on four critical areas: (1) developing an understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing an understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing an understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing, and decomposing geometric shapes. (NJSL)

STUDENT OUTCOMES

(Linked to [New Jersey Student Learning Standards for Mathematics 2016](#))

OPERATIONS AND ALGEBRAIC THINKING (1.OA)

A. Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.²
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

B. Understand and apply properties of operations and the relationship between addition and subtraction.

3. Apply properties of operations as strategies to add and subtract.³ *Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.) {Students need not use formal terms for these properties}*
4. Understand subtraction as an unknown-addend problem. *For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.*

C. Add and subtract within 20.

5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

D. Work with addition and subtraction equations.

7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.*
8. Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = \square - 3$, $6 + 6 = \square$.*

NUMBER OPERATIONS IN BASE TEN (1.NBT)

A. Extend the counting sequence.

1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

B. Understand place value.

2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
 - a. 10 can be thought of as a bundle of ten ones — called a “ten.”
 - b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
 - c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

C. Use place value understanding and properties of operations to add and subtract.

4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.

MEASUREMENT AND DATA (1.MD)**A. Measure lengths indirectly and by iterating length units.**

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.
2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

B. Tell and write time.

3. Tell and write time in hours and half-hours using analog and digital clocks.

C. Represent and interpret data.

4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

GEOMETRY (1.G)**A. Reason with shapes and their attributes.**

1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.
2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.⁴
3. Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.

6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Strategies

- Teacher presentation
- Teacher read-aloud
- Group discussion
- Small Group instruction
- Group presentations
- Interactive Smartboard Lessons
- Partner work
- Museum walks
- Math talk (students explain their thinking)
- Small Group Work
- Daily 5 Math
- Centers/ stations

Accommodations

[Accommodations and Modification Addendum](#)

Assessments

Formative	Summative
<ul style="list-style-type: none"> ● Independent student work ● Ready Classroom Lesson Quizzes ● Teacher Observations ● Class Participation ● Class Discussions ● Class Assignments ● Homework Assignments ● Notebooks ● Anecdotal Records 	<ul style="list-style-type: none"> ● Mid-Unit Test ● Unit Test
Benchmark	Alternative
<ul style="list-style-type: none"> ● I-Ready Diagnostic ● Performance Assessments 	<ul style="list-style-type: none"> ● Live Online Assessment Tools (Kahoot, Brainpop) ● Student Projects ● Student Presentations ● Self-Assessments

Resources

Required/Primary	Supplemental
<ul style="list-style-type: none"> ● Ready Classroom Mathematics, Curriculum Associates, LLC <ul style="list-style-type: none"> ○ Teacher Manual Volumes 1 & 2 ○ Student Books Volumes 1 & 2 ○ Ready Classroom Teacher Toolbox 	<ul style="list-style-type: none"> ● Brain Pop ● IXL ● Reflex Math ● Online Tutorials (Learnzillion, Khan Academy, Math Antics) ● Online Math Games (Math is Fun, Funbrain, Cool Math Games, Math Playground)

Essential Questions And Content

OPERATIONS AND ALGEBRAIC THINKING

- **Partners and Number Patterns Through 10**
 - What do I know about numbers less than 10?

- What patterns can I find in numbers less than 10?
- **Addition and Subtraction Strategies**
 - What does it mean to add or to subtract?
 - Are there different ways to show addition or subtraction?
- **Unknown Numbers in Addition and Subtraction**
 - Can I use strategies to find missing numbers in addition or subtraction problems?

NUMBER OPERATIONS IN BASE TEN

- **Place Value Concepts**
 - How can I use what I know about place value to read and write numbers up to 100 and beyond?
- **Place Value Situations**
 - What patterns are there in place value?
- **Two-Digit Addition**
 - How can I use what I know about place value to add numbers bigger than 10?

MEASUREMENT AND DATA

- **Comparisons and Data**
 - How can I collect, represent, and compare information that I have?
 - What should I use to measure how big things are?
 - How do I know what time it is?

GEOMETRY

- **Shapes, Attributes and Equal Shares**
 - What shapes can I make with other shapes?
 - How can I divide a shape into equal parts?

Pacing and Interdisciplinary Connections

A. Operations And Algebraic Thinking

Numbers Within Ten

Lessons 1-10(50 days)

- Count on to Add
- Doubles and Near Doubles
- Missing Addends
- Count on to Subtract
- Add and Subtract Word Problems
- Strategies for Addition and Subtraction Facts

Numbers Within Twenty

Lessons 11-18 (40 days)

- Understanding Teen Numbers
- Make a Ten to Add
- Totals Greater than Ten
- Make a Ten to Subtract
- Finding an Unknown Number
- Word Problems to Twenty

Interdisciplinary Connections:

- ***Math/ Literacy***

1. OA.2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Activity: Students will create and solve word problems up to 20

- ***Math/Visual and Performing Arts***

1.OA2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Visual and Performing Arts: 1.4.2.Cn11b: Collaborate on the creation of a short scene based on personal perspectives and understandings.

Activity: Students will work with a partner. Each student will create a number story. The partner will act out the number story to solve the problem.

B. Number Operations In Base Ten

Counting and Place Value

Lessons 19-24 (24 days)

- Teens as Tens and Ones
- Place Value to 120
- Comparing numbers

Operations with Tens and Ones

Lessons 25-29 (21 days)

- Add and Subtract Tens
- Understand Ten More and Ten Less
- Add Two-Digit and One-Digit Numbers
- Add Two-Digit and Two Digit Numbers

Interdisciplinary Connections:

- **Math/Science**

1-LS1-1.A: Structure and Function All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow

1.NBT.B.3 Compare two two-digit numbers based on the meanings of the tens and one digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

Activity: Students will record and compare the growth of the plants in the classroom.

- **Math/ Literacy**

W.1.5. With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers and self-reflection, and add details to strengthen writing and ideas as needed.

1.NBT.B.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols .

Activity: Students will survey classmates asking which genre of writing they prefer. Students will use this information to compare the number of students that prefer fiction to nonfiction or other genres.

C. Measurement And Data

Comparing, Ordering, and Measuring

Lessons 30-32(15 days)

- Tell and Write Time
- Order Objects by Length
- Length Measurement

Interdisciplinary Connections:

- **Math/Science**

1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

Activity: Students will line up pipes and determine if being in size order changes the sound.

- **Math/ Literacy**

1.MDC. 4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than the other.

SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

Activity: Students will use the data gathered about their favorite author to analyze findings. Example: How many more children like Mo William than Kevin Henkes.

D. Geometry

Analyzing, Composing, and Partitioning Shapes

Lessons 33-35 (13 days)

- Shape Identification
- Breaking Shapes into Equal Parts

Interdisciplinary Connections:

- **Math/ Literacy**

1.GA.1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

RI.1.1. Ask and answer questions about key details in a text.

Activity: Students will read text about shapes and their attributes and respond to questions.

- **Science/ Math**

K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.*[Clarification Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.]

1.GA.2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

Activity: Students will use shapes to create to help reduce the warming effect of sunlight on an area.

Career, Computer Science, and Key Skills

Operations And Algebraic Thinking

- **Career Ready Practices**

- Utilize critical thinking to make sense of problems and persevere in solving them.

1.OA.A.2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Activity: The students will solve word problems. After solving the word problems students will share out with a partner how they solved their problem and what tools they use.

- **9.2 Career Awareness, Exploration, and Preparation**

- **9.2.2.CAP.1:** Make a list of different types of jobs and describe the skills associated with each job. Income is received from work in different ways including regular payments, tips, commissions, and benefits.

1.OA.B4. Understand subtraction as an unknown-addend problem.

Activity: Students will be given a homework assignment to ask their parents about ways they solve math problems at their place of employment. Students will share with their peers.

- **9.4 Life Literacies and Key Skills**

- **9.4.2.CT.3:** Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
- **9.4.2.TL.2:** Create a document using a word processing application.
- **9.4.2.DC.6:** Identify respectful and responsible ways to communicate in digital environments.

1.OA.A.2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Activity: Students will work with partners creating word problems. Each student will take turns solving their partner's work.

- **Computer Science**

- **8.1.2.CS.1:** Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.

1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Activity: Students create a number story on the computer and solve the activity using pictures.

Number Operations In Base Ten

- **Career Ready Practices**

- Demonstrate creativity and innovation.

1.NBT.B.2.C The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

Activity: Students will be given an assignment to build a structure using base ten blocks. Once the structure is created students will then take it apart and count how many of each were used, giving totals of hundreds, tens, and ones.

- **9.2 Career Awareness, Exploration, and Preparation**

- **9.2.2.CAP.1:** Make a list of different types of jobs and describe the skills associated with each job.

1.NBT.B.3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

Activity: Students will work with a partner. Each partner will create a coin combination using pennies and dimes for various jobs. They will then compare the numbers using the symbols $>$, $=$, and $<$. For example, the baker is greater than the truck driver.

- **9.4 Life Literacies and Key Skills**

- **9.4.2.CI.1:** Demonstrate openness to new ideas and perspectives.
- **9.4.2.DC.3:** Explain how to be safe online and follow safe practices when using the internet.
- **9.4.2.IML.1:** Identify a simple search term to find information in a search engine or digital resource.

1.NBT.B.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

Activity: Students will explore various ways to decompose numbers when adding a two-digit number by playing a variety of online games to reinforce skills.

- **Computer Science**

- **8.1.2.CS.1:** Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.

1.NBT.C.6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.

Activity: Students will use the iReady lessons and games to strengthen their skills.

Measurement And Data

- **Career Ready Practices**

- Demonstrate creativity and innovation.

1.MD.A.1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.

Activity: Students will be given an assignment to search for objects around the classroom. The objects will be sorted out at the desk. Students will then have a museum walk (students will walk to each desk articulating what they see).

- **9.2 Career Awareness, Exploration, and Preparation**

- **9.2.2.CAP.1:** Make a list of different types of jobs and describe the skills associated with each job. Income is received from work in different ways including regular payments, tips, commissions, and benefits.

1.MD.C.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Activity: Students will discuss in groups the importance of creating surveys, gathering data, and analyzing it. Students will discuss what types of jobs need information gathered to be successful.

- **9.4 Life Literacies and Key Skills**

- **9.2.2.CAP.2:** Explain why employers are willing to pay individuals to work. There are benefits and drawbacks to being an entrepreneur.
- **9.4.2.DC.1:** Explain differences between ownership and sharing of information.
- **9.4.2.IML.4:** Compare and contrast the way information is shared in a variety of contexts.
- **9.4.2.TL.7:** Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts.

1.MD.C.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Activity: Students will discuss when owning a business why it is important to track your products being sold, customers who purchase products, and how making graphs help a business grow.

- **Computer Science**

- **8.1.2.DA.4:** Make predictions based on data using charts or graphs.

1.MD.C.4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Activity: Students will survey another class. They will input the results into a google spreadsheet and create a bar graph. The students will report out their findings.

Geometry

- **Career Ready Practices**

- Work productively in teams while using cultural/global competence.

1.G.A.1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

Activity: Students will work together in groups to sort shapes by several different attributes. Sharing out and their reasoning for the sort.

- **9.2 Career Awareness, Exploration, and Preparation**

- **9.2.2.CAP.1:** Make a list of different types of jobs and describe the skills associated with each job.

1.G.A.2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

Activity: Students will work to create shapes and build a structure. They will then connect the importance of knowing how shapes fit together to make a sound structure. As a class discussion students will list jobs that require understanding shapes.

- **9.4 Life Literacies and Key Skills**

- **9.4.2.CT.3:** Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
- **9.4.2.IML.1:** Identify a simple search term to find information in a search engine or digital resource.
- **9.4.2.TL.2:** Create a document using a word processing application.

1.G.A.3. Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Activity: Students will be given various shaped objects and decide if those objects can be divided into equal parts. Students will then use Google Docs adding shapes and dividing them in half.

- **Computer Science**

- o **8.1.2.CS.1:** Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.

1.G.A.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

Activity: Students will use the iReady math lessons to strengthen their skills.