

LaGrange School District 105

1st Grade

Math Curriculum

Statement of Philosophy:

Mathematics is an integrated, balanced program strong in the acquisition of computational skills and the development of mathematical reasoning. To prepare students to be college and career ready, mathematics instruction must build procedural fluency from conceptual understanding. Students should develop the ability to solve problems and reason logically while working with various media and gaining mathematical competency. The mathematics curriculum is viewed as a continuum of introducing, developing, and extending skills. The program is structured yet flexible enough to meet each student's needs.

Mathematical Practices:

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. There are eight (8) practices outlined through the Common Core Math Standards:

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.

For more detailed descriptions of each mathematics practice visit: <http://www.corestandards.org/Math/Practice/>

1st Grade Mathematics - Overall Emphasis

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

1. Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.
2. Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and

100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

3. Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.¹
4. Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

For more detailed descriptions of each mathematics practices visit: <http://www.corestandards.org/Math>

1st Grade Mathematics - CCSS Math Focus Strands

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

Number and Operations in Base Ten

- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data

- Measure lengths indirectly and by iterating length units.
- Tell and write time.
- Represent and interpret data.

Geometry

- Reason with shapes and their attributes.

Unit 1: Addition and Subtraction within 10

Timing: Start of year through October

Big Ideas in Unit 1:

add to find a sum subtract to find the difference write an addition and subtraction equation use flip-flop facts to add in any order
use strategies to solve addition and subtraction word problems explain what equal means.

Unit 1 Math Standards and Conceptual Understandings:

- 1.NBT.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.
- 1.OA.1** Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart (using objects, drawings, and equations with a symbol for the unknown number to represent the problem)
- 1.OA.5** Relate counting to addition and subtraction (e.g., by counting on 2 to add 2)
- 1.OA.6** Add and subtract within 20, demonstrating fluency for addition and subtraction within 10
- 1.OA.7** Understand the meaning of the equal sign

Unit 2: Addition and Subtraction within 20

Timing: November – December

Big Ideas in Unit 2:

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|---|---------------------------------|--|---|
| -Model teen numbers | -Add and subtract 0 | -Count on to add | -Count back to subtract |
| -Use a number line to add | -Use a number line to subtract | -Use doubles facts to add and subtract | -Use near doubles to add subtract |
| -Add to 10 | -Solve a problem with 3 addends | -Make a fact family | -Use related facts with addition & subtraction |
| -Decompose numbers to add with friendly numbers | | -Solve for the unknown number | Choose the most efficient strategy to solve problem |

Unit 2 Math Standards and Conceptual Understandings:

- 1.NBT.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.
- 1.OA.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.
- 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.
- 1.OA.3** Apply properties of operations as strategies to add and subtract. 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 do not need to use formal terms for these properties.)
- 1.OA.4** Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.
- 1.OA.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 $6 + 6 + 1 = 12 + 1 = 13$).
- 1.OA.8** Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = _ - 3$, $6 + 6 = _$*
- 1.NBT.2b** The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

Unit 3: Measurement and Data

Timing: January

Big Ideas in Unit 3:

- Measure the length of an object with no gaps or overlaps
- Organize, represent, and interpret data with up to 3 categories
- Order 3 objects by length
- Understand that the length of an object is the number of same-size length units
- Ask my own questions about a graph

Unit 3 Math Standards and Conceptual Understandings:

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

1.MD.A.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*

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

Unit 4: Place Value

Timing: February-March

Big Ideas in Unit 4:

- Add within 100
- Add 2 two-digit numbers
- Add a two-digit number and a one-digit number
- Add two numbers and make a new group of ten
- Add a two-digit number with a multiple of ten
- Compare 2 two-digit numbers using $<$, $>$, $=$
- Understand that the two digits of a two-digit number represent amounts of tens and ones.

Unit 4 Math Standards and Conceptual Understandings:

1.NBT.A.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

1.NBT.B.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

1.NBT.B.2.A 10 can be thought of as a bundle of ten ones — called a "ten"

1.NBT.B.2.B The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones

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)

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 $<$

1.NBT.C.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 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

Unit 5: Geometry and Time

Timing: April

Big Ideas in Unit 5:

- Distinguish shapes by attributes
- Partition shapes into halves and fourths
- Tell time in half-hours
- Build and draw shapes to possess defining attributes
- Tell and write time in hours
- Tell time using both analog and digital clocks
- Use 2-D shapes to create a composite shape

Unit 5 Math Standards and Conceptual Understandings:

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

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

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

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

Unit 6: Addition and Subtraction within 100 Using Place Value Understanding

Timing: May-June

Big Ideas in Unit 6:

- Add within 100
- Add 2 two-digit numbers
- Add a two-digit number and a one-digit number
- Add two numbers and make a new group of ten
- Add a two-digit number with a multiple of ten
- Understand that the two digits of a two-digit number represent amounts of tens and ones

Unit 6 Math Standards and Conceptual Understandings:

1.OA.B.3 Apply properties of operations as strategies to add and subtract.2 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.)

1.OA.C.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 $6 + 6 + 1 = 12 + 1 = 13$)

1.OA.D.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? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$

1.NBT.A.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

1.NBT.C.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 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

[1.NBT.C.5](#) Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used

[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.