Matanuska-Susitna Borough School District
Summary of First Grade Math Standards

MAJOR, SUPPORTING, AND ADDITIONAL CLUSTERS FOR FIRST GRADE

All clusters are important and need to be taught for student success. The major clusters emphasize the depth of conceptual understanding and require more time for students to master the concepts. The supporting and additional clusters will help expand knowledge of the major clusters.

Key:	Major Clusters ■	Supporting Clusters □	Additional Clusters ○

1.CC.1-3	■ Know ordinal names and counting flexibility.
1.CC.4	■ Count to tell the number of objects.
1.CC.5-6	■ Compare numbers.
1.OA.1-2	■ Represent and solve problems involving addition and subtraction.
1.OA.3-4	■ Understand and apply properties of operations and the relationship between addition and subtraction.
1.OA.5-6	■ Add and subtract using numbers up to 20.
1.OA.7-8	■ Work with addition and subtraction equations.
1.OA.9	□ Identify and continue patterns.
1.NBT.1	■ Extending the counting sequence.
1.NBT.2-3	■ Understand place value.
1.NBT.4-6	■ Use place value understanding and properties of operations to add and subtract.
1.MD.1-2	■ Measure lengths indirectly and by iterating length units.
1.MD.3-6	○ Work with time and money.
1.MD.7	□ Represent and interpret data
1.G.1-3	○ Reason with shapes and their attributes.

First Grade Focal Points

Highlights: Major Clusters

- Manipulatives are still very important in first grade as students move from concrete to abstract learners.
- Using common language while teaching word problems is important (add to, take from, put together, take apart and compare). This vocabulary is introduced in kindergarten and helps students understand word problem situations. Teachers should use diagrams to visualize word problems.
- It's appropriate to read aloud word problems throughout the year for emerging readers.
- Integrate progression/hierarchy strategies (counting all→ counting on→ double→ make a 10→ splitting→ jumping)
- The meaning of the "=" sign is equality or "is the same as" not just a solve now symbol
- Representing and interpreting data should be included in daily routines such math warm-ups, review, morning message, etc.
- Calendar activities can be used to supplement and introduce concepts before they are taught in the textbook
    - Time to the half hour
    - Coin identification and value
    - Graphing (weather)
    - Skip counting by 2's & 5's
    - estimation
    - Read and write dates
    - Patterns

Fluency

Fluency means accuracy (attending to precision), efficiency (using well-understood strategies with ease), and flexibility (using strategies such as making 10 or breaking apart numbers).

Adding and subtracting within 10 (1.OA.6)

1st Grade Math

Instructional Focus:

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.

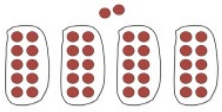
1. Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare 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.
5. Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

Counting and Cardinality

1.CC.1-3 Know ordinal names and counting flexibility

Standard	Objective	Examples
1.CC.1. Skip count by 2s and 5s.	• Count by 2s. • Count by 5s.	• *2, 4, 6, 8* • *5, 10, 15, 20* • *insert in daily calendar*
1.CC.2. Use ordinal numbers correctly when identifying object position (e.g., first, second, third, etc.).	• Label an object in a line using the correct ordinal number.	• *What position is the rectangle in line?* • *What is the second shape in line?* 
1.CC.3. Order numbers from 1 - 100. Demonstrate ability in counting forward and backward.	• Count forward or backward from any given number between 1 and 100. • Organize a collection of given numbers between 1 and 100 in ascending or descending order.	• *Start counting forward from 29 or start counting backward from 32* • *Put these numbers (29, 56, 71, 9) in order from least to greatest.*

1.CC.4 Count to tell the number of objects

Standard	Objective	Examples
1.CC.4. Count a large quantity of objects by grouping into 10s and counting by 10s and 1s to find the quantity. .(Also see 1.NBT.2.)	• Find the total number of objects in a collection by organizing into groups of 10s and 1s. • Count a quantity of objects by counting groups of 10s and then 1s.	• Counting collections 

**Images are taken from NC Dept. of Public Instruction, Instructional Support Tools K and 1*

1.CC.5-6 Compare numbers

Standard	Objective	Examples
1.CC.5. Use the symbols for greater than, less than or equal to when comparing two numbers or groups of objects. (Also see 1.NBT.3.)	• Compare two numbers, or groups of objects, using the symbols for greater than, less than, or equal to.	• Use kinesthetic symbols, bend pipe cleaners, or make cards for students show their thinking. • *Use greater than, less than, or equal to:* *45 ___ 9 13 ____ 13 23 ____ 57*
1.CC.6. Estimate how many and how much in a given set to 20 and then verify estimate by counting.	• Estimate the quantity of objects in a group of 20 or less. Check estimate by counting.	• Estimation Jar – teacher can fill with various objects or the jar can be sent home with students to fill • *Estimate how many counters are on the table:* 

Operations and Algebraic Thinking

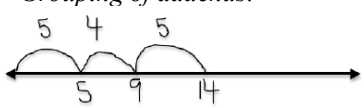
1.OA.1-2 Represent and solve problems involving addition and subtraction

Standard	Objective	Examples

1.OA.1. Use addition and subtraction strategies to solve word problems (using numbers up to 20), involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions, using a number line (e.g., by using objects, drawings and equations). Record and explain using equation symbols and a symbol for the unknown number to represent the problem.	• Solve addition and subtraction word problems using numbers 0-20, with unknown initial, change or total amounts.
	• Model an addition or subtraction word problem using drawings, words, or manipulatives.
	• Use equation symbols (+, -, =) to represent an addition or subtraction story.
	• Use math discourse to explain connections between a problem and its matching equation.
		• *Unknown parts:*
		  ○ *Unknown initial: __ + 5 = 8*
		  ○ *Unknown change: 3 + __ = 8*
		  ○ *Unknown total: 3 + 5 = 8*
		• *Word Problem: 5 fish in the pond and 2 turtles in the pond. How many animals were in the pond?*
		  ○ *Matching equation: 5 + 2 = 7*
		  ○ *Math discourse: I know there were 5 fish and I added 2 more for the turtles. I counted and there were 7 altogether.*
		  ○ *Encourage students to make a movie in their head*
		  ○ *Link the example types from Tena-Table 2 or addition/subtraction word problems*

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). Record and explain using equation symbols and a symbol for the unknown number to represent the problem.	• Solve word problems with 3 addends and a sum of 20 or less.
	• Use objects, drawings and equations to model word problems with 3 addends.
	• Use equation symbols (+, -, =) to represent word problems with 3 addends.
	• Use math discourse to explain connections between a problem and its matching equation.
		• *Word Problem: 5 fish, 2 turtles and a duck were in the pond. How many animals were in the pond?*
		  ○ *Matching equation: 5 + 2 + 1 = 8*
		  ○ *Math discourse: I put 5 blocks on my paper for fish. I added 2 more blocks for the turtles and one more block for the duck. I counted and there were 8 altogether.*

1.OA.3-4 Understand and apply properties of operations and the relationship between addition and subtraction

Standard	Objective	Examples
1.OA.3. Apply properties of operations as strategies to add and subtract. (Students need not know the name of the property.) *For example: 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).*	• Show that the order of two addends in an equation does not change the sum. • Show that the way numbers are grouped in an addition problem does not change the sum. • Show that any number plus zero does not change.	• *Order of addends:*  • *Grouping of addends:* 

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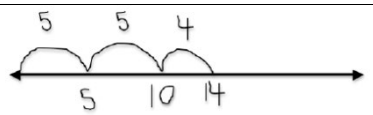
Demonstrate that when adding zero to any number, the quantity does not change (Identity property of addition).		
1.OA.4. Understand subtraction as an unknown-addend problem. *For example: subtract 10 - 8 by finding the number that equals10 when added to 8.*	• Set up a subtraction problem as an addition problem with an unknown addend.	• *When seeing the problem 10 – 8, students can think, "What plus 8 equals 10."*

1.OA.5-6 Add and subtract using numbers up to 20

Standard	Objective	Examples
1.OA.5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	• Make a connection between counting on and addition. • Make a connection between counting back and subtraction.	• Students may use a number line or 100s chart to show counting on/back. • *When adding 6 + 2, students can count on (6: 7, 8) or count all (1, 2, 3, 4, 5, 6, 7, 8)* • *When subtracting 6 – 2, students can count back (6: 5, 4) or count all (1, 2, 3, ~~4, 5, 6~~)*
1.OA.6. Add and subtract using numbers up to 20, demonstrating fluency for addition and subtraction up to 10. Use strategies such as counting on making ten (8 + 6 = 8 + 2 + 4 = 10 + 4 = 14) decomposing a number leading to a ten (13 - 4 = 13 - 3 - 1 = 10 - 1 = 9) using the relationship between addition and subtraction, such as fact families, (8 + 4 = 12 and 12 - 8 = 4) creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	• Implement a variety of strategies to add and subtract between 0 and 20, including: ○ Counting on ○ Making ten ○ Using equivalent sums ○ Decomposing a number ○ Using a fact family • Show accuracy and efficiency in computation facts with sums or differences of 0 - 10.	• Make an anchor chart or poster showing different addition and subtraction strategies. • *Show your work in two or more ways for 6 + 5.* ○ *Counting on: 6: 7, 8, 9, 10, 11* ○ *Making ten: (6 + 4) + 1* ○ *Equivalent sum: (6+6) – 1* • *Show your work in two or more ways for 11 – 6.* ○ *Decomposing: (11 – 1) – 5* ○ *Fact family: 5 + 6 = 11, so 11 – 6 = 5*

1.OA.7-8 Work with addition and subtraction equations

Standard	Objective	Examples
1.OA.7. Understand the meaning of the equal sign (e.g., read equal sign as "same as") 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).*	• Recognize that the equal sign can be read as "same as." • Recognize if equation statements are true. (6 = 6, 6 ≠ 8)	• Use kinesthetic symbols to show equal and unequal. Have students write their own equation statement and trade with a friend. • use a scale to show the equals sign means equality
1.OA.8. Determine the unknown whole number in an addition or subtraction equation. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 6 + 6 = ?, 5 = ? - 3.*	• Solve addition and subtraction problems with an unknown change amount.	• *Five cookies were on the table. I ate some cookies. Then there were 3 cookies. How many cookies did I eat?*

**Images are taken from NC Dept. of Public Instruction, Instructional Support Tools K and 1*

1.OA.9 Identify and continue patterns

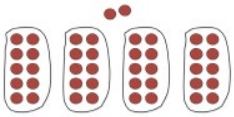
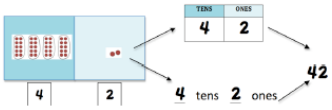
Standard	Objective	Examples
1.OA.9. Identify, continue and label patterns (e.g., aabb, abab). Create patterns using number, shape, size, rhythm or color.	• Identify patterns • Continue patterns • Label patterns • Create patterns using numbers, shapes, sizes, rhythms, or colors.	• Connect patterns to music and art. • Have students create their own patterns and trade with a friend to continue and label.

Numbers and Operations in Base Ten

1.NBT.1 Extending the counting sequence

Standard	Objective	Examples
1.NBT.1. Count to 120. In this range, read, write and order numerals and represent a number of objects with a written numeral.	• Count any number of given objects within 120 and represent them with a written numeral. • Orally say a number when seeing it. • Write a numeral when hearing its name. • Identify a number from a set when orally given the number.	

1.NBT.2-3 Understand place value

Standard	Objective	Examples
1.NBT.2. Model and identify place value positions of two-digit numbers. Include: 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).	• Count 10 objects and bundle them into one group of ten. • Count groups as though they were individual objects. • Express teen numbers as a bundle of ten and ones. • Recognize that when a number has no extra ones it is a multiple of ten.	• Incorporate place value ideas into daily calendar routines. Add straw or stick for each day in school, bundle to make groups of ten. *Count and bundle objects:*   *Count groups of tens and ones:*
1.NBT.3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, <.	• Compare two two-digit numbers, or groups of objects, using the symbols for greater than, less than, or equal to. • Identify the meaning of each digit.	• Use kinesthetic symbols, bend pipe cleaners, or make cards for students show their thinking.

1.NBT.4-6 Use place value understanding and properties of operations to add and subtract

Standard	Objective	Examples
1.NBT.4. Add using numbers up to 100 including adding a two-digit number and a one-digit number and adding a two-digit number and a multiple of 10. Use: • Concrete models or drawings and strategies based on place value. • Properties of operations and/or relationship between addition and subtraction. • Relate the strategy to a written method and explain the	• Solve addition problems that have a two-digit addend and a one-digit addend. • Solve addition problems that have a two-digit addend and an addend that is a multiple of ten. • Show thinking using concrete models or drawings. • Relate the strategy to a written method and explain the strategy that was used. • Show that, while adding, groups of ten are combined, groups of ones are combined and, if needed, bundled into new groups of ten.	• Using place value manipulatives may be useful to show adding of groups of tens, groups of ones and bundling. • Use a number line or 100s chart to add the following: 68 + 5 68 + 20

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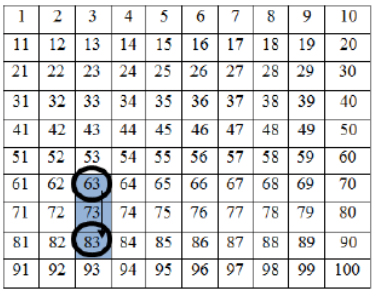
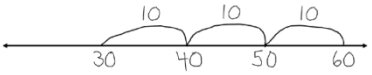
reasoning used. Demonstrate in adding two-digit numbers, tens and tens are added, ones and ones are added and sometimes it is necessary to compose a ten from ten ones.		
1.NBT.5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	• Mentally add 10 to any two-digit number without counting. • Mentally subtract 10 from any two-digit number without counting. • Use math discourse to explain strategy.	• Build background understanding with exploration using a 100s chart. For example: Start at 59, add 10 more. Where do you land? What do you notice? 
1.NBT.6. Subtract multiples of 10 up to 100. Use: • Concrete models or drawings • 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.	• Subtract multiples of 10 from a two-digit number.	• While looking at 60 – 30 students may use concrete models (cubes, 100s charts), drawings, place value strategies, knowledge of addition and subtraction. 

Measurement and Data

1.MD.1-2 Measure lengths indirectly and by iterating length units

Standard	Objective	Examples
1.MD.1. Measure and compare three objects using standard or non-standard units.	• Measure and compare three objects using standard or non-standard units.	• Students might build background knowledge by reading or listening to: Measuring Penny by Loreen Leedy. • *Students might answer questions like: Who is taller? Who is shorter? What are three objects in the classroom that are the same length as, longer than, and shorter than your hand?*
1.MD.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.	• Use multiple copies of one object to measure the length of a larger object with no gaps or overlap.	• Have students use paperclips, their hand, snap cubes, etc. to measure and record different items in the classroom. 

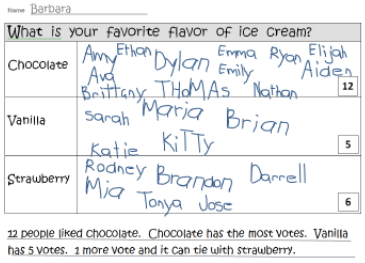
1.MD.3-6 Work with time and money

Standard	Objective	Examples
1.MD.3. Tell and write time in half hours using both analog and digital clocks.	• Tell time to the half hour on a digital and analog clock. • Record the time to the half hour on a digital and analog clock.	• Teacher holds a clock; students say the time. Teacher says a time; student's model on clock.

**Images are taken from NC Dept. of Public Instruction, Instructional Support Tools K and 1*

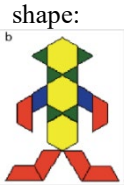
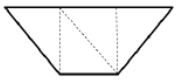
		• Use songs and movement to practice telling time.
1.MD.4. Read a calendar distinguishing yesterday, today and tomorrow. Read and write a date.	• Read a calendar and identify yesterday, today, and tomorrow. • Read and write a date.	• Incorporate daily calendar routine into math lesson. Keep classroom calendar or schedule. • *Model different ways to write the date: Wednesday, June 5, 2013 or 6-5-13.*
1.MD.5. Recognize and read money symbols including $ and ¢.	• Recognize the symbols for dollar ($) and cent (¢).	• Incorporate into daily calendar routine. • Set up a classroom store and have kids buy/sell items.
1.MD.6. Identify values of coins (e.g., nickel = 5 cents, quarter = 25 cents). Identify equivalent values of coins up to $1 (e.g., 5 pennies = 1 nickel, 5 nickels = 1 quarter).	• Identify values of coins, including penny, nickel, dime, and quarter. • Identify equivalent values of coins up to one dollar.	• Answer riddles about coins, for example: *I am silver. I am worth 25¢.* • Make a graphic organizer or tree map to show equivalent coin values.

1.MD.7 Represent and interpret data

Standard	Objective	Examples
1.MD.7. Organize, represent and interpret data with up to three categories. Ask and answer comparison and quantity questions about the data.	• Collect data that can be organized into two or three categories. • Ask and answer comparison questions about the data. • Ask and answer quantity questions about the data.	• Explore collecting data with tally marks, quick surveys, and by sorting items. • Use sentence frames to help students describe or compare data. 

Geometry

1.G.1-3 Reason with shapes and their attributes

Standard	Objective	Examples
1.G.1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes. Identify shapes that have non-defining attributes (e.g., color, orientation, overall size). Build and draw shapes given specified attributes.	• Distinguish between attributes that define a shape and attributes that do not. • Build and draw shapes when given specified attributes.	• Answer riddles about shapes. • Use pattern blocks to explore different shapes and attributes. • Use geo-boards to explore different shapes and attributes. • Use toothpicks to build shapes with specific attributes.
1.G.2. Compose (put together) two-dimensional or three-dimensional shapes to create a larger, composite shape, and compose new shapes from the composite shape.	• Use 2D shapes to create a larger, composite shape. • Find shapes within a larger picture.	• Use 2D shapes to create a larger, composite shape:  • Find shapes within a larger picture: 

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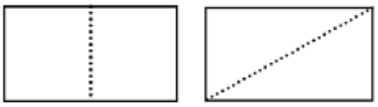
1.G.3. Partition circles and rectangles into two and four equal shares. Describe the shares using the words*, halves, fourths*, and *quarters* and phrases *half of, fourth of* and *quarter of*. Describe the whole as two of or four of the shares. Understand for these examples that decomposing (break apart) into more equal shares creates smaller shares.	• Divide a circle or rectangle into two or four equal parts. • Show that a half or a quarter of a shape is smaller than the whole.	• How many ways can you and a friend share a piece of paper so that you both have the same amount of paper to paint a picture? 

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