North Carolina Department of Public Instruction
INSTRUCTIONAL SUPPORT TOOLS
FOR ACHIEVING NEW STANDARDS

1st Grade Mathematics ● Unpacked Contents
For the new Standard Course of Study that will be effective in all North Carolina schools in the 2018-19 School Year.

This document is designed to help North Carolina educators teach the 1st Grade Mathematics Standard Course of Study. NCDPI staff are continually updating and improving these tools to better serve teachers and districts.

What is the purpose of this document?
The purpose of this document is to increase student achievement by ensuring educators understand the expectations of the new standards. This document may also be used to facilitate discussion among teachers and curriculum staff and to encourage coherence in the sequence, pacing, and units of study for grade-level curricula. This document, along with on-going professional development, is one of many resources used to understand and teach the NC SCOS.

What is in the document?
This document includes a detailed clarification of each standard in the grade level along with a *sample* of questions or directions that may be used during the instructional sequence to determine whether students are meeting the learning objective outlined by the standard. These items are included to support classroom instruction and are not intended to reflect summative assessment items. The examples included may not fully address the scope of the standard. The document also includes a table of contents of the standards organized by domain with hyperlinks to assist in navigating the electronic version of this instructional support tool.

How do I send Feedback?
Please send feedback to us at feedback@dpi.state.nc.us and we will use your input to refine our unpacking of the standards. Thank You!

Just want the standards alone?
You can find the standards alone at http://www.ncpublicschools.org/curriculum/mathematics/scos/.

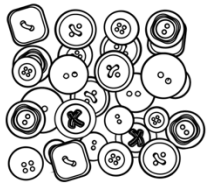
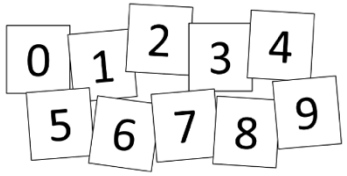
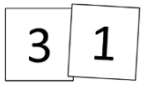
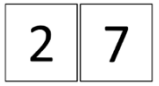
Standards for Mathematical Practice

Practice	Explanation and Example
1. Make sense of problems and persevere in solving them.	Mathematically proficient students in First Grade continue to develop the ability to focus attention, test hypotheses, take reasonable risks, remain flexible, try alternatives, exhibit self-regulation, and persevere (Copley, 2010). As the teacher uses thoughtful questioning and provides opportunities for students to share thinking, First Grade students become conscious of what they know and how they solve problems. They make sense of task-type problems, find an entry point or a way to begin the task, and are willing to try other approaches when solving the task. They ask themselves, "Does this make sense?" First Grade students' conceptual understanding builds from their experiences in Kindergarten as they continue to rely on concrete manipulatives and pictorial representations to solve a problem, eventually becoming fluent and flexible with mental math as a result of these experiences.
2. Reason abstractly and quantitatively.	Mathematically proficient students in First Grade recognize that a number represents a specific quantity. They use numbers and symbols to represent a problem, explain thinking, and justify a response. For example, when solving the problem: "*There are 60 children on the playground. Some children line up. There are 20 children still on the playground. How many children lined up?"* first grade students may write 20 + 40 = 60 to indicate a Think-Addition strategy. Other students may illustrate a counting-on by tens strategy by writing 20 + 10 + 10 + 10 + 10 = 60. The numbers and equations written illustrate the students' thinking and the strategies used, rather than how to simply compute, and how the story is decontextualized as it is represented abstractly with symbols.
3. Construct viable arguments and critique the reasoning of others.	Mathematically proficient students in First Grade continue to develop their ability to clearly express, explain, organize and consolidate their math thinking using both verbal and written representations. Their understanding of grade appropriate vocabulary helps them to construct viable arguments about mathematics. For example, when justifying why a particular shape isn't a square, a first grade student may hold up a picture of a rectangle, pointing to the various parts, and reason, "It can't be a square because, even though it has 4 sides and 4 angles, the sides aren't all the same size." In a classroom where risk-taking and varying perspectives are encouraged, mathematically proficient students are willing and eager to share their ideas with others, consider other ideas proposed by classmates, and question ideas that don't seem to make sense.
4. Model with mathematics.	Mathematically proficient students in First Grade model real-life mathematical situations with a number sentence or an equation, and check to make sure that their equation accurately matches the problem context. They also use tools, such as tables, to help collect information, analyze results, make conclusions, and review their conclusions to see if the results make sense and revising as needed.
5. Use appropriate tools strategically.	Mathematically proficient students in First Grade have access to a variety of concrete (e.g. 3-dimensional solids, ten frames, number balances, number lines) and technological tools (e.g., virtual manipulatives, calculators, interactive websites) and use them to investigate mathematical concepts. They select tools that help them solve and/or illustrate solutions to a problem. They recognize that multiple tools can be used for the same problem- depending on the strategy used. For example, a child who is in the counting stage may choose connecting cubes to solve a problem. While, a student who understands parts of number, may solve the same problem using ten-frames to decompose numbers rather than using individual connecting cubes. As the teacher provides numerous opportunities for students to use educational materials, first grade students' conceptual understanding and higher-order thinking skills are developed.
6. Attend to precision.	Mathematically proficient students in First Grade attend to precision in their communication, calculations, and measurements. They are able to describe their actions and strategies clearly, using grade-level appropriate vocabulary accurately. Their explanations and reasoning regarding their process of finding a solution becomes more precise. In varying types of mathematical tasks, first grade students pay attention to details as they work. For example, as students' ability to attend to position and direction develops, they begin to notice reversals of numerals and self-correct when appropriate. When measuring an object, students check to make sure that there are not any gaps or overlaps as they carefully place each unit end to end to measure the object (iterating length units). Mathematically proficient first grade students understand the symbols they use (=, >,<) and use clear explanations in discussions with others. For example, for the sentence 4 > 3, a proficient student who is able to attend to precision states, "Four is more than 3" rather than "The alligator eats the four. It's bigger."

7. Look for and make use of structure.	Mathematically proficient students in First Grade carefully look for patterns and structures in the number system and other areas of mathematics. For example, while solving addition problems using a number balance, students recognize that regardless whether you put the 7 on a peg first and then the 4, or the 4 on first and then the 7, they both equal 11 (commutative property). When decomposing two-digit numbers, students realize that the number of tens they have constructed 'happens' to coincide with the digit in the tens place. When exploring geometric properties, first graders recognize that certain attributes are critical (number of sides, angles), while other properties are not (size, color, orientation).
8. Look for and express regularity in repeated reasoning.	Mathematically proficient students in First Grade begin to look for regularity in problem structures when solving mathematical tasks. For example, when adding three one-digit numbers and by making tens or using doubles, students engage in future tasks looking for opportunities to employ those same strategies. Thus, when solving 8+7+2, a student may say, "I know that 8 and 2 equal 10 and then I add 7 more. That makes 17. It helps to see if I can make a 10 out of 2 numbers when I start." Further, students use repeated reasoning while solving a task with multiple correct answers. For example, in the task "There are 12 crayons in the box. Some are red and some are blue. How many of each could there be?" First Grade students realize that the 12 crayons could include 6 of each color (6+6 = 12), 7 of one color and 5 of another (7+5 = 12), etc. In essence, students repeatedly find numbers that add up to 12.

Return to Standards

Extend and recognize patterns in the counting sequence **NC.1.NBT.1** Count to 150, starting at any number less than 150.	
Clarification	**Checking for Understanding**
This standard calls for students to rote count from a given number without having to go back and start at one. Students should develop accurate counting strategies that build on the understanding of how the numbers in the counting sequence are related—each number is one more (or one less) than the number before (or after). This skill builds from counting work in Kindergarten, and serves as a prerequisite skill for counting on to add. The focus of this standard is rote counting only, and does not require recognition of numerals or writing numerals.	Sample Student Interview: Teacher: Begin at 88 and count up to 102 Student: *88, 89…umm…90, 91, 92, 93, 94, 95, 96, 97, 98, 99…umm…100, 101* Teacher: I noticed you paused to think at 89. How did you figure out the next number? Student: *After each number that ends in 9, comes a number that ends in 0. So, I remembered the next number is 90.*

Extend and recognize patterns in the counting sequence **NC.1.NBT.7** Read and write numerals, and represent a number of objects with a written numeral, to 100.	
Clarification	**Checking for Understanding**
This standard calls for students to read and write numerals to represent a given amount. • When determining the quantity of a set within 100, students will select the appropriate number card/tile (numeral recognition) or write the numeral. • When given a numeral or number card/tile, students will create a set of items that represents the numeral presented. As students explore larger numbers and develop understanding of place value, they will recognize that the position of each digit in a number impacts the quantity of the number. They become more aware of the order of the digits when they write numbers. **For example:** a student may write "17" and mean "71". Through teacher demonstration, opportunities to "find mistakes", and questioning by the teacher ("I am reading this and it says seventeen. Did you mean seventeen or seventy-one? How can you change the number so that it reads seventy-one?"), students become precise as they write numbers to 100.	Teacher: How many buttons are in this bag? Use the number cards to show the amount.   Student: *I counted 31. I used these number cards to make 31.*  Teacher: Use the buttons to make a set to match this number.  Student: *That's 27! Here are 27 buttons.* 

Return to Standards

Understand place value.

NC.1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones.

- Unitize by making a ten from a collection of ten ones.
- Model the numbers from 11 to 19 as composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
- Demonstrate that the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens, with 0 ones.

Clarification

The focus of this standard is to build place value understanding through tens. First Grade students extend their work from Kindergarten when they composed and decomposed numbers from 11 to 19 into ten ones and some further ones. In Kindergarten, everything was thought of as individual units, "ones". In First Grade, students are asked to unitize those ten individual ones as a whole unit: "*one* ten". Students are introduced to the idea that a bundle of ten ones is called "a ten". This is known as unitizing. Students in first grade explore the idea that the teen numbers (11 to 19) can be expressed as *one* ten and some leftover ones.

When students unitize a group of ten ones as a whole unit ("a ten"), they are able to count groups as though they were individual objects. For example, 4 trains of ten cubes each have a value of 10 and would be counted as 40 ones or as 4 tens. This can often be challenging for young children to consider a group of something as "one" when all previous experiences have been counting single objects. This is the foundation of the place value system and requires time and rich experiences with concrete manipulatives to develop.

In addition, when learning about forming groups of 10, students learn that a numeral can stand for many different amounts, depending on its position or place in a number. This is an important realization as young children begin to work through reversals of digits, particularly in the teen numbers.

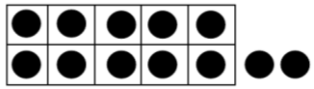
Students apply their understanding of groups of ten to decade numbers (e.g. 10, 20, 30, 40). As they work with groupable objects, students understand that 10, 20, 30…80, 90 are comprised of a certain amount of groups of tens with none left-over.

A deep understanding of place value is developed over time as students have ample experiences with a variety of groupable materials (i.e., materials that can be grouped, snapped, or connected to make a ten). Pre-grouped materials (i.e., materials like base ten blocks and bean sticks, which must be traded to make a ten) are not introduced until a student has a firm understanding of composing and decomposing ten. Additionally, students should have access to proportional manipulatives, meaning the size of "ten" is ten times bigger than one single manipulative. Coins could cause a misconception with regards to developing an understanding of place value.

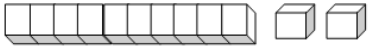
Checking for Understanding

Here is a pile of 12 cubes. Do you have enough to make a ten? Would you have any leftover? If so, how many leftovers would you have?

Student A:
I filled a ten frame to make a ten and had two counters left over. The number 12 has 1 ten and 2 ones.



Student B:
I counted out 12 cubes. I had enough to make 10. I now have 1 ten and 2 cubes left over. The number 12 has 1 ten and 2 ones.

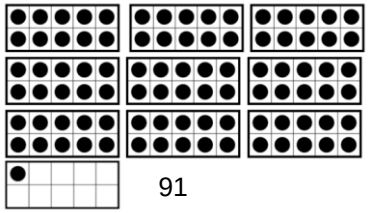


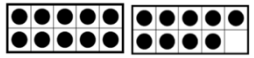
Are the number 19 and 91 the same or different? **(19 91)**

Teacher: Are these numbers the same or different?
Students: *Different!*

Teacher: Why do you think so?
Student A: *Even though they both have a one and a nine, I know the 1 in 19 represents one group of ten. The 1 in 91 represents 1 one.*

Student B: *I know the 9 in 91 represents nine groups of tens. The 9 in 19 represents 9 ones.*



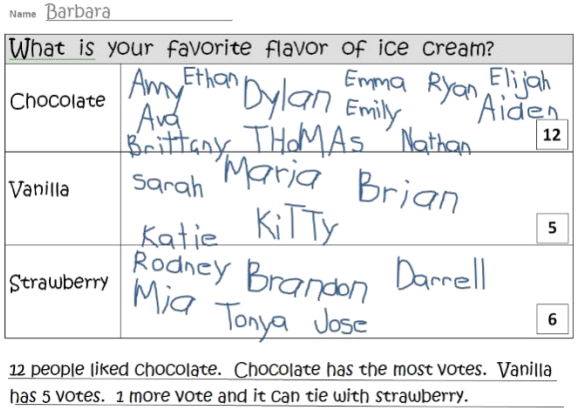


Return to Standards

Represent and interpret data

NC.1.MD.4 Organize, represent, and interpret data with up to three categories.

- Ask and answer questions about the total number of data points.
- Ask and answer questions about how many in each category.
- Ask and answer questions about how many more or less are in one category than in another.

Clarification	**Checking for Understanding**
In this standard, students collect and use categorical data (e.g., eye color, shoe size, age) to answer a question. The data collected are organized in a chart or table. Once the data are collected, students interpret the data to answer a question. Students are also expected to describe the data noting particular aspects such as the total number of answers, which category had the most/least responses, and interesting differences/similarities between the categories. New to Grade 1, students are expected to answer questions about how many more and how many less are in one category than in another. These should all be one-step problems limited to numbers within 20.	The question, "What is your favorite flavor of ice cream?" is posed. *The categories chocolate, vanilla and strawberry are determined as anticipated responses and written down on the recording sheet. When asking each classmate about their favorite flavor, the student's name is written in the appropriate category.* *Once the data are collected, the student counts up the amounts for each category and records the amount. The student then analyzes the data by carefully looking at the data and writes 3 sentences about what they notice about the data.* *Possible response:*  Name Barbara What is your favorite flavor of ice cream? Chocolate: Amy, Ethan, Dylan, Emma, Ryan, Elijah, Ava, Emily, Aiden, Brittany, THOMAS, Nathan — 12 Vanilla: Sarah, Maria, Brian, Katie, KiTTy — 5 Strawberry: Rodney, Brandon, Darrell, Mia, Tonya, Jose — 6 12 people liked chocolate. Chocolate has the most votes. Vanilla has 5 votes. 1 more vote and it can tie with strawberry.

Return to Standards