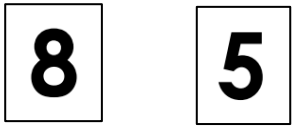
Compare numbers.
NC.K.CC.6 Identify whether the number of objects, within 10, in one group is greater than, less than, or equal to the number of objects in another group, by using matching and counting strategies.

Clarification	**Checking for Understanding**
This standard calls for students use their counting ability to compare two sets of concrete objects (0 to 10). Early comparisons involve matching objects from each set in order to see if a group has extras, or repeatedly removing one object from each group until only one group is left with extra objects. Later, students apply their knowledge of number to count the objects in each group, determining which group has more/less. An important goal of this standard is to develop comparison language: more/greater, less/fewer, and equal/same amount. This language supports standards in successive grades where students are asked, "How many more?" and "How many less?"	Students are given a set of triangles and a set of squares. They are asked to find which set has more. *Possible responses:* Student A Matching *I lined up one square and one triangle. Since there is one extra triangle, there are more triangles than squares.*  Student B Equal Shares *I put them in a pile. I then took away objects. Every time I took a square, I also took a triangle. When I had taken almost all the shapes away, there was still a triangle left. That means that there are more triangles than squares.* Student C Compare Counts *I counted the squares and I got 4. Then I counted the triangles and got 5. Since 5 is bigger than 4, there are more triangles than squares.*

Compare numbers
NC.K.CC.7 Compare two numbers, within 10, presented as written numerals

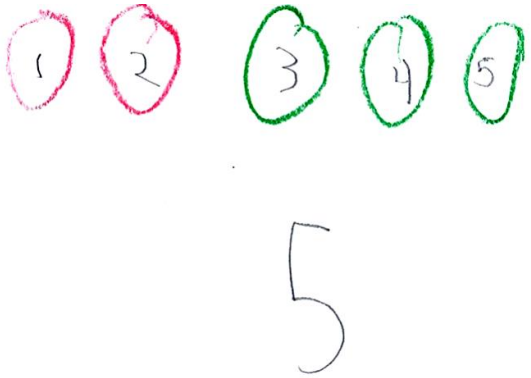
Clarification	**Checking for Understanding**
Students apply their understanding of numerals 1 to 10 to compare one numeral to another. For example, looking at the numerals 8 and 10, a student can recognize that the numeral 10 represents a larger amount than the numeral 8. Students need ample experiences with actual sets of objects (NC.K.CC.3 and NC.K.CC.6) before completing this standard with only numerals.	When shown two numerals, student determines which is greater or if they are both equal. 

Return to Standards

Understand addition and subtraction.

NC.K.OA.1 Represent addition and subtraction, within 10:

- Use a variety of representations such as objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, or expressions.
- Demonstrate understanding of addition and subtraction by making connections among representations.

Clarification	**Checking for Understanding**
In this standard, students demonstrate understanding of how objects can be put together (composed) and taken apart (decompose) by modeling addition and subtraction of up to 10 objects in various ways. This standard develops the understanding that addition and subtraction of whole numbers is based on sequential counting with whole numbers. Situations that can be represented by addition or subtraction can be considered as basic applications of counting forward or back. Within this standard, students build on their counting skills and continue to establish one-to-one correspondence by moving, touching, or pointing to concrete objects that they are counting as they say corresponding number words (NCTM). This standard is focused on understanding the concept of addition and subtraction, rather than reading and solving addition and subtraction number sentences (equations). Therefore, before introducing symbols (+, -, =) and equations, kindergarteners require numerous experiences using addition and subtraction vocabulary in order to attach meaning to the various symbols. For example, when explaining a solution, kindergartens may state, "*Three and* two *is the same amount as* 5." While the meaning of the equal sign is not introduced as a standard until First Grade, if equations are going to be modeled and used in Kindergarten, students must connect the symbol (=) with its meaning (is the same amount/quantity as).	Lilly has two pieces of red candy and three pieces of green candy. How many pieces of candy does Lilly have? *Possible response:* *I drew two red candies and three green candies. I put them together to see how many pieces of candy Lilly has.* 

Return to Standards

Understand addition and subtraction.

NC.K.OA.2 Solve addition and subtraction word problems, within 10, using objects or drawings to represent the problem, when solving:

- Add to/Take From-Result Unknown
- Put Together/ Take Apart (Total Unknown and Two Addends Unknown)

Clarification

In this standard, students apply their work from NC.K.OA.1 to solve addition and subtraction problems involving a variety of situations.

Kindergarten students work with four problem types (see chart: *Kindergarten Problem Types*). The first two problem types involve an action; something is physically added to or taken from the starting amount. The last two problem types do not involve an action; students work with part-part-whole relationships. They may know the amounts in each part, and solve to the find whole amount. Or, students may be given the whole amount, and find the amount in each part.

Kindergarten Problem Types

Action	**Add To- Result Unknown**	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?
	Take From- Result Unknown	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?
No Action	**Put Together/Take Apart- Total Unknown**	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?
	Put Together/Take Apart- Both Addends Unknown	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

Early problem solvers should be encouraged to act out the problem situation with concrete objects. Eventually, students will transition to using drawings, numbers, and words to represent their work. Drawings need not show details, but should show the mathematics in the problems.

Checking for Understanding

Take From – Result Unknown Problem**:** Nine grapes were in a bowl. Tom ate 3 grapes. How many grapes are in the bowl now?

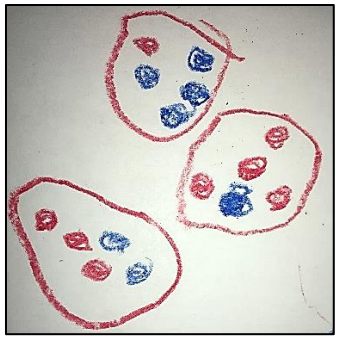
Possible response:

I got 9 "grapes" and put them in the bowl. Then, I took 3 grapes out of the bowl. I counted the grapes still left in the bowl… 1, 2, 3, 4, 5, 6. Six. There are 6 grapes in the bowl.

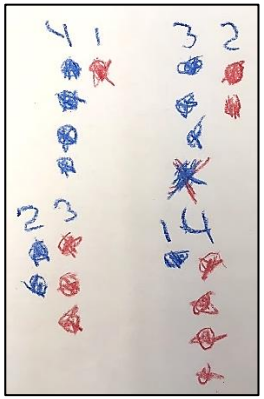
Put Together/Take Apart – Both Addends Unknown Problem: Bobby Bear is missing 5 buttons on his jacket. How many ways can you use blue and red buttons to finish his jacket? Draw a picture of all your ideas.

Possible responses:

I made five with one red button and four blue buttons. Then I did two blue and three red. Then I did one blue and four red.



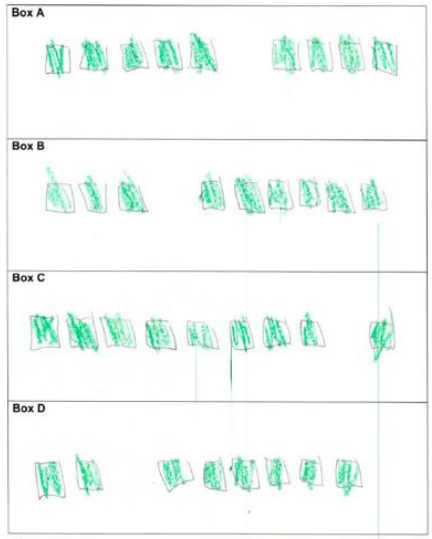
I put four blue buttons and one red button. I took one away from the blue and put one with the red. This makes three blue and two red. I kept doing this.



Return to Standards

Understand addition and subtraction.

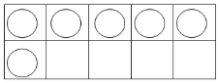
NC.K.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way using objects or drawings, and record each decomposition by a drawing or expression.

Clarification	**Checking for Understanding**
In this standard, students develop an understanding of part-whole relationships as they recognize that a given group of objects (up to 10) can be decomposed into sub-groups while remaining equivalent to the total amount. For example, a set of 6 cubes can be separated into a set of 2 cubes and a set of 4 cubes while remaining 6 total cubes. Additionally, this standard asks students to recognize that a group can be decomposed (broken apart) in multiple ways. As students use concrete objects and drawings to explore this concept, they search for all partners that compose a number, noticing patterns as they work. Through these experiences, students discover number relationships and begin to internalize addition/subtraction facts. In Kindergarten, students need ample experiences breaking apart numbers and using the vocabulary “and” & “same amount as” before symbols (+, =) and equations (5= 3 + 2) are introduced. If equations are used, a mathematical representation (picture, objects) needs to be present as well.	How many ways can you break 9 into two parts? Use a drawing or numbers to show your work. *Possible responses:* *Student A:* *Creates a list of partners of 9* • *1 and 8* • *2 and 7* • *3 and 6* • *4 and 5* *Student B:* 

Return to Standards

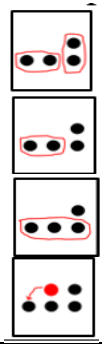
Understand addition and subtraction.

NC.K.OA.4 For any number from 0 to 10, find the number that makes 10 when added to the given number using objects or drawings, and record the answer with a drawing or expression.

Clarification	**Checking for Understanding**
This standard builds on the work of NC.K.OA.3, where students developed an understanding that a number, less than or equal to 10, can be decomposed into parts. Standard NC.K.OA.4 calls for students to find the number that makes ten when added to a given number. Through numerous concrete experiences, kindergarteners will model the various sub-parts of ten and find the missing part of 10.	John has 6 beans. How many more beans does he need to have 10 beans?  *"I have 6 beans. I need 4 more beans to have 10 in all."* A full case of juice boxes has 10 boxes. There are only 6 boxes in this case. How many juice boxes are missing? *Possible responses:* Student A: *Using a Ten-Frame* *I used a ten frame for the case. Then, I put on 6 counters for juice still in the case. There's no juice in these 4 spaces. So, 4 are missing.*  Student B: *Think Addition* *I counted out 10 counters because I knew there needed to be ten. I pushed these 6 over here because they were in the container. These are left over. So, there's 4 missing.* 

Return to Standards

Understand addition and subtraction.
NC.K.OA.6 Recognize and combine groups with totals up to 5 (conceptual subitizing).

Clarification	**Checking for Understanding**
This standard calls for students to conceptually subitize a group of objects (up to 5). Conceptual subitizing involves recognizing a number pattern as a group composed of subgroups. Students visually see subgroups of quantities within a larger quantity and learn that the subgroups can be combined to compose a whole. This standard is connected to NC.K.CC.4 where students perceptually subitize, as they "instantly see" a set of up to five objects without using other mental processes. Standard NC.K.OA.6 extends the work of NC.K.CC.4 as students notice patterns of dots (subgroups) within the whole set and use other mental processes to determine the whole quantity. For example, a student may instantly see part of the set and count on, or they may see two parts of the set and know the total amount. Conceptual subitizing develops from frequent and varied experiences counting sets of objects and noticing patterning within sets. It helps develop number sense and is the basis for addition and subtraction.	"Quick Image" Task: Teacher displays a dot card for 3-4 seconds and asks students to find the quantity without counting each dot individually.  Student A: *I see two and one. I know that makes three.* Student B: *I saw two. Then, I said "three" because that's one more.* Steps are repeated with additional dot cards.  Task: The teacher displays a dot card and asks students to find "how many" without counting each individual dot. Students explain how they found the quantity. *Possible responses:*  *"I saw 2 and 2. I know that makes 4."* *"I saw 2. Then, I counted 3, 4."* *"I saw 3. One more makes 4."* *"It looked like 4 on a die/dice, but one dot fell down."*

Return to Standards

Build foundation for place value.

NC.K.NBT.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones by:

- Using objects or drawings.
- Recording each composition or decomposition by a drawing or expression.
- Understanding that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Clarification	**Checking for Understanding**
This standard calls for students to explore numbers 11-19 using representations, such as manipulatives or drawings. They group ten individual objects to represent "10", keeping each count as a single unit (1, 2, 3, 4, 5, 6, 7, 8, 9, 10). In first grade (NC.1.NBT.2), students are introduced the idea that a bundle of ten ones is called a "ten" and seen as a unit (unitizing). This is not the expectation in kindergarten.	Sample Student Interview: Teacher: "I have some chips here. Do you think they will fit on our ten frame? Why? Why Not? Use your ten frame to investigate." Student A: *"There are too many to fit on the ten frame. Only 10 will fit!"* Teacher: "So you have some leftovers?" Student A: *"Yes. I'll put them over here next to the ten frame."* Teacher: "How many do you have in all?" Student A: *"One, two, three, four, five… ten, eleven, twelve, thirteen, fourteen. I have fourteen. Ten fit on and four didn't."* Student B: *Pointing to the ten frame, "See, that's 10… 11, 12, 13, 14. There's fourteen."* Teacher: Use your recording sheet (or number sentence cards) to show what you found out. Sample Student Recording Sheets: