

**THEME: Teen Numbers as Tens and Ones & Partners, Problems Drawings, and Tens****COUNTING AND CARDINALITY (CC)****Know number names and the count sequence.**

K.CC.1 Count to 100 by ones and tens

**Count to tell the number of objects.**

K.CC.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

**Compare numbers.**

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

K.CC.7 Compare (without using inequality symbols) two numbers between 0 and 10 when presented as written numerals.

**OPERATIONS AND ALGEBRAIC THINKING (OA)****Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.**

K.OA.2 Solve addition and subtraction problems (written or oral), and add and subtract within 10 by using objects or drawings to represent the problem.

K.OA.3 Decompose numbers and record compositions for numbers less than or equal to 10 into pairs in more than one way by using objects and, when appropriate, drawings or equations.

K.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or, when appropriate, an equation.

K.OA.5 Fluently add and subtract within 5.

**NUMBER AND OPERATIONS IN BASE TEN (NBT)****Work with numbers 11-19 to gain foundations for place value.**

K.NBT.1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g.,  $18 = 10 + 8$ ); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight or nine ones.

**MEASUREMENT AND DATA (MD)****Classify objects and count the number of objects in each category.**

K.MD.3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

**GEOMETRY (G)****Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).**

K.G.3 Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

**Describe, compare, create, and compose shapes.**

K.G.4 Describe and compare two- or three-dimensional shapes, in different sizes and orientations, using informal language to describe their commonalities, differences, parts, and other attributes.

**Commentary:**

Students enter kindergarten with a broad range of experiences with numbers. Some will be able to count by rote from 1 to 100 (or a subset of that range). Others may have limited experience with counting to 10. Keep in mind that the content standards identify what students should know and be able to do by the end of kindergarten.

Therefore, you will need to scaffold individual standards to meet the needs of students. For example, it is likely that you will begin the school year focusing on rote counting (sequencing number names) to 20 and at the same time, work only on counting physical objects to 5. By the end of the year, students should be able to successfully complete all of these standards.

Students work over the course of the year to count from 1 to 100. They begin counting by ones, and as the range of numbers grows, they also count by tens. Although this standard includes recognizing numerals, it does not include reading or writing numerals.

Students move from rote counting to finding the number of objects in a set. Cardinality refers to the actual count or number of items in a set. As students show proficiency rote counting within a range of numbers, for example, 1 to 10, they can begin to find the number of objects in a set within that range. It is important for students to connect the physical objects (3 counters) with the oral number word (three) with the numeral (3). Students should begin with counting physical objects, progress to pictures, and then connect the physical representations to the numeral.

Students continue to count items in a set, using physical and pictorial representations. In addition, given a number, students count out that quantity of items. Numeral recognition is developed throughout this cluster, so students should recognize a written numeral and count a number of counters given the number orally or given the written numeral. Provide a variety of concrete experiences before students draw the pictures.

Students will build on previous knowledge to develop strategies to compare two concrete quantities and later connect that idea to comparing two number words and two numerals. The language of more than (greater than) and less than (fewer than) can extend to “how many more?” and “how many less?,” which begins the concept of additive thinking (one more than, two more than, one less than, etc.). Developing this language and giving students a variety of experiences will lay a solid foundation for future work with addition and subtraction.

Students begin to work with two sets of objects to compare the numbers in each set.

**Commentary:**

Students must be able to count items in a group, recognize number words and numeral representations, compare two groups of objects to identify which is greater or less, and associate numbers with each set to begin understanding the abstract nature of comparing numbers given only the numerals.

Students begin to explore addition and subtraction through solving problems first using concrete objects and then using pictures, eventually becoming familiar with expression  $(3 + 5)$  and equation  $(3 + 5 = 8)$  notation. The vocabulary of addition and subtraction actions emphasizes addition as joining two sets or adding on to a set. Taking items from a set or taking apart a set are subtraction situations that students experience by modeling. These conceptual understandings are the basis for relating addition and subtraction; they also provide early strategies that lead to fluency. Note that the word *total* is used in place of *sum* at this level to avoid confusion with its homonym, *some*.

Students connect their work to applying addition and subtraction to various word problem situations.

Students should first use concrete objects and later use drawings to represent what is happening in the problem. Possible situations for addition and subtraction word problems are

- *Add to – result unknown (8 add some equals a result:  $8 + 3 = \underline{\quad}$ )*
- *Take from – result unknown (7 take away some equals a result:  $7 - 2 = \underline{\quad}$ )*
- *Put together – total known (put together 8 and 3 and get a total:  $8 + 3 = \underline{\quad}$ )*
- *Take apart – total unknown (take 8 apart to make 2 groups:  $8 = \underline{\quad} + \underline{\quad}$ )*

Students should have multiple experiences with each situation but do not need to identify the situation by name.

Students should have many opportunities to take apart numbers up to 10 in different ways using concrete materials and to explain their thinking and patterns that they have found. Ample time should be spent with numbers up to 5 to help students develop fluency with sums to 5.

Ten is one of the most important numbers in our number system. Once students have experienced decomposing 10 in a variety of ways, they begin to recognize number pairs that add to 10. Given any number less than 10, students should use materials such as ten frames and linking cubes to find the missing addend that will make a total of 10.

**Commentary:**

By the end of kindergarten, students should know addition and subtraction facts with sums to 5 from memory. In order to be fluent, students should be able to give a sum or difference in about 3 seconds without resorting to counting.

Once students understand counts from 1 to 9, they can begin to think of the number 10 as 10 ones and the number 11 as ten ones and one more. This is a major work of kindergarten and will be developed across the entire school year.

Students will learn to distinguish between attributes and characteristics. Students will identify similarities and differences between objects ( e.g., size, color, shape ) and use the attributes to sort a collection of objects.

The study of geometry in kindergarten is essential as students must be able to recognize and visualize shapes in their surroundings. Many students are already exposed to shapes as they play, draw, color, build, and explore with toys and technology.

Students will learn that specific attributes (number of side, angles, etc.) define what a shape is called and other attributes (color, size, and orientation) do not. Using the attributes, students identify and describe squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres. Students will find and identify shapes around home and school. They recognize, compare, and sort the shapes based upon geometric attributes. A variety of experience must be provided for students to locate both two-dimensional and three-dimensional objects as well as describe the positional location of the objects.

Students need numerous activities to explore various forms of shapes including different types of triangles (equilateral, isosceles, scalene); different sizes (big and small); and different orientations (rotated upside down or to the right).

**Instructional Resources**

Math Expressions: Unit 3 (Sections 3.13-3.21) Unit 4 (Sections 4.1-4.22)

Manipulatives: Student Math White Boards, Objects of counting, Five frames, Ten frames, Hundreds chart, Dot cards, Numeral cards, Part-Part Whole Chart, Number line, Place Value Chart, Variety of objects to sort, Variety of nonstandard measurement tools, Two-dimensional and three dimensional shapes, Attributes blocks, Pattern blocks, Tangrams and Shapes

Achieve The Core Fluency Resource

Digital: Think Central – Soar to Success for Below Level and Mega Math for On Level

Differentiated Instruction Activities Pages: 285, 289, 293, 297, 301, 305, 311, 315, 321, 333, 339, 345, 351, 357, 363, 369, 377, 383, 389, 395, 401, 407, 413, 419, 423, 427, 431, 435, 441, 447 and 453

**Assessment Resources**

Unit 3: Quick Quiz 3, and 4

Unit 3 Assessment Form A and Form B

Unit 4 Quick Quiz 1, 2, 3 and 4

Unit 4 Assessment Form A and Form B

Formative: Check for Understanding embedded in each lesson.

**Addressing Student Misconceptions and Common Errors****K.CC.1**

Students who confuse the sequence of numbers (ex. 1,4,7,3,9, 2), skip numbers ( ex. 1,2,3,5,6,7,9...) or repeat numbers (1,2,3,4,2,3,4) need more experience counting within a smaller range of numbers. Students should be fluent within a range before increasing the range.

Words for the teen numbers may be confusing since they do not follow the pattern of other decade numbers (ex. Fourteen vs. twenty-four).

Provide more practice with reciting teen numbers and connecting the number name with the written numeral.

Focus on oral patterns such as the sequence of the ones place digits in the twenties is the same as the sequence of the ones place as digits in the thirties.

20,	21,	22,	23,	24,	25,	26,	27,	28,	29
30,	31,	32,	33,	34,	35,	36,	37,	38,	39



**Addressing Student Misconceptions and Common Errors Cont.****K.OA.3**

Although it is appropriate for kindergartners to use their fingers in initial counting and exploration experiences, focus on concrete and pictorial representations to develop an understanding that numbers can be put together and taken apart in a variety of ways. Students need many opportunities with different materials to explore this concept and to explain their thinking with numbers to 5 and later extending to 10. This forms the foundation for future work with place value and helps students to form mental images and strategies as they start to work with number facts.

**K.OA.4**

Watch for students who miscount the total number in their representation and actually decompose a number other than 10. Students who are struggling with counting strategies need more experience modeling how smaller numbers can be decomposed and justifying by counting before working with 10.

**K.OA.5**

Students who cannot give a correct response in a reasonable amount of time (3-4 seconds) or are depending on counting on their fingers have not developed fluency with these facts. An important prerequisite of adding and subtracting is being able to count. Students who continue to count from 1 or struggle with counting on need practice with rote counting as well as more experience with concrete materials and drawings. Only when they are ready should they work with making explicit connections to expressions and equations and basic facts. Begin with strategies such as counting on 1 or 2. Help students to see the pattern of what happens when they add zero. Explore with doubles facts (1+1, 2+2). The sums to 5 present opportunities to think about decomposing and added to make the sum 2+2+1. Subtraction facts are usually more difficult for students to master and require more concrete experiences with subtraction problem situations and concrete connections to related addition facts.

**K.NBT.1**

Kindergarten students have several new concepts with which to grapple as part of this standard including the notion of 10 ones being grouped together. Watch for those who struggle with this important place value concept. The concept that 1 group of 10 ones and some more ones can represent the same idea as the number they originally counted will be a stretch for some students, and they will need many opportunities to compose groups of 10 with concrete materials. The other concept that may present a challenge is the teen number names. A group of 10 and one more has the name “eleven”; a group of 10 and two more is called “twelve”; a group of 10 and three more is called “thirteen.” Students entering kindergarten with little number experience may need much more practice with the representations and connecting representations to the number names.

**Addressing Student Misconceptions and Common Errors Cont.****K.MD.3**

Often times, students are able to sort but are not able to label each set. Through discussions, the teacher can help students think about and create a label for each set of items sorted. Counting may be an issue for some students as they point to one object and count 1, 2 before pointing to the next object in a set or collection. Teachers can review one-to-one correspondence and remind students, as they point to one object, only one number should be associated with the count.

**K.G.3**

Students may use incorrect terminology when describing shapes. For example, students may say a cube is a square. Teachers should help students learn that the two-dimensional shape is a part of the object (e.g., a square is a “face” of a cube).

**K.G.4**

Kindergarten may not realize that triangles can be inverted or rotated. Some children may recognize the triangle shown below on the left as a triangle because it has a flat bottom but may believe the triangle on the right is not a triangle. Students may decide to name a triangle based on perception, not reasoning.



Kindergartners may not consider the properties of two-dimensional shapes and may believe the shapes below are rectangles.



With numerous experiences and discussions using a variety of shapes, students can correct the misconceptions and learn to identify triangles and rectangles of any form, size, or orientation.

Source: [The Common Core Mathematics Companion: The Standards Decoded \(What They Say, What They Mean, How to Teach Them\)](#)

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