THEME: Understand Numbers 1 – 10

COUNTING AND CARDINALITY (CC)
Know number names and the count sequence.

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

K.CC.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects.

Count to tell the number of objects.

K.CC.4   Understand the relationship between numbers and quantities; connect counting to cardinality using a variety of objects including pennies.

      c. Understand that each successive number name refers to a quantity that is one larger.

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.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.

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

K.G.2 Correctly name shapes regardless of their orientations or overall size.

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.

K.G.6 Combine simple shapes to form larger shapes.

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 number grows, they also count by tens. Although this standard includes recognizing numerals, it does not include reading or writing numerals.

Students recognize and write the numerals 0 to 20. Begin with the single-digit numerals and represent the number of items in a set with the appropriate numeral. Additionally, given a numeral, students can represent that number of items in a set.

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 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 abtract nature of comparing numbers given only the numerals.

Commentary:

Kindergarten students build upon their understanding of counting to develop meaning for addition and subtraction through modeling and representing problem situations, using concrete objects and pictorial representations.

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

Understanding that numbers can be put together and taken apart in different ways in foundational to many future mathematics concepts including and beyond addition and subtraction. Students should have many opportunities to take apart numbers up to 10 in deferent ways using concrete materials and to explain their thinking and patterns that they have found.

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.

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 attributes, students identify and describe squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres. Students 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 will understand that specific attributes (number of side, angles, etc.) define what a shape's name is and other attributes (color, size, and orientation) do not. Using the attributes, students can identify and describe what shapes look like such as cubes, cones, cylinders, and spheres. 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	Assessment Resources
Math Expressions: Unit 2 (Sections: 2.1 –2.20) Unit 3 (Sections 3.1-3.12)	Unit 2: Quick Quiz 1, 2, 3, and 4
Manipulatives: Student Math White Boards, Objects of counting, Five frames, Ten frames, Hundreds chart, Numeral cards, Part-Part Whole Chart, Number line, Place Value Chart, Two-dimensional and three dimensional shapes, Attributes blocks, Pattern blocks, Tangrams and Shapes	Unit 2 Assessment Form A and Form B
	Unit 3: Quick Quiz 1, and 2
	Unit 3 Assessment Form A and Form B
Achieve The Core Fluency Resource	Formative: "Check for Understanding embedded in each lesson.
Digital: Think Central – Soar to Success for Below Level and Mega Math for On Level	
Differentiated Instruction Activities Pages: 107, 111, 117, 121, 125, 129, 133, 137, 143, 149, 153, 157, 163, 167, 171, 175, 181, 185, 189, 195,207, 217, 223, 239, 243, 247, 251, 261, 267, 273 and 279	

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.CC.3

K.CC.4
Watch for students who find it confusing to say one number name with one object as they count (one-to-one correspondence). Begin with a smaller number of objects and model saying the number name as you physically move the object. Have students do the same. Also, watch for students who double count an object. Physically moving the object and saying one number name for each object will help to reinforce one-to-one correspondence; that is, one object goes with one number name. Students may see 5 items spread out as different from 5 items close together. Students should physically move the objects matching one item from one set with one item from the other set to understand that the count of 5 remains the same no matter how the objects are organized.

K.CC.5

K.CC.7

K.OA.2

K.OA.3
K.OA.4

Addressing Student Misconceptions and Common Errors Cont.

K.G.2
Kindergarten students usually will not recognize a triangle that has been inverted or turned upside down. Students often say that an inverted triangle does not look like a triangle. Teachers can provide activities to talk about what a shape looks like and identify specific attributes that define a shape. Another way to address this misconception is to have students trace shapes.

K.G.4

K.G.6

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