01-Counting and Cardinality

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **8 weeks**
Status: **Published**

General Overview, Course Description or Course Philosophy

Kindergarten instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

1. Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 - 2 = 5$. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

2. Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

In this unit, students will focus on the following skills and concepts:

- Count to 100 by ones.

- Count to 100 by tens.

- Count forward beginning from a given number within the known sequence.

- Represent a number of objects with a written numeral 0-20

- Understand the relationship between numbers and quantities to 10; connect counting to cardinality.

    - When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and

only one object.
- o Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
- o Understand that each successive number name refers to a quantity that is one larger.
- Count to answer "how many?" questions about as many as 10 things arranged in a line, a rectangular array, or a circle, or as many as 5 things in a scattered configuration; given a number from 1–10, count out that many objects.
- Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group
- Compare two numbers between 1 and 10 presented as written numerals.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Enduring Understandings:

- Numbers have names and we can use the names to count.
- Numbers are symbols used to represent and compare quantities of items.
- Numbers are used daily in our lives to communicate the quantity of items we have or want.
- Numbers are ordered from least to greatest.

Essential Questions:

- What are numbers?
- Where can we find numbers?
- Why do we need to count?
- How do we count?
- How can we represent numbers (numerals, objects, pictures, wor
- How does counting help in our everyday lives?
- How do we compare two numbers?
- How can we order and compare numbers?

CONTENT AREA STANDARDS

MA.K.CC	Counting and Cardinality
MA.K.CC.A	Know number names and the count sequence.

MA.K.CC.A.1	Count to 100 by ones and by tens.
MA.K.CC.A.2	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
MA.K.CC.A.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).
MA.K.CC.B	Count to tell the number of objects.
MA.K.CC.B.4	Understand the relationship between numbers and quantities; connect counting to cardinality.
MA.K.CC.B.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.
MA.K.CC.B.4a	When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
MA.K.CC.B.4b	Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
MA.K.CC.B.4c	Understand that each successive number name refers to a quantity that is one larger.
MA.K.CC.C	Compare numbers.
MA.K.CC.C.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.
MA.K.CC.C.7	Compare two numbers between 1 and 10 presented as written numerals.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

LA.SL.K.1	Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
LA.SL.K.1.A	Follow agreed-upon norms for discussions (e.g., listening to others with care and taking turns speaking about the topics and texts under discussion).
SEL.PK-12.5.2	Utilize positive communication and social skills to interact effectively with others
WRK.K-12.P.1	Act as a responsible and contributing community members and employee.
WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
TECH.K-12.P.1	Act as a responsible and contributing community members and employee.

STUDENT LEARNING TARGETS

- I can count out loud by ones to 100 starting at 0 by the end of the year

- I can recognize patterns in the counting sequence

- I can count out loud by tens to 100 starting at 0 (e.g., 0, 10, 20, ...)

- I can count forward out loud from any given number (1 to 99)

- I can write numerals to represent a given set of objects

- I can create a drawing or model using concrete materials to represent written numerals 0 to 20

- I can identify written numerals 0 to 20

- I can pair each object with one and only one number name

- I can describe how the last number named when counting represents the total number of objects in the set, as well as the last object counted

  - (e.g., 4 identifies the total number of objects in a set of 4, not just the fourth object counted)

- I can identify the number of objects arranged in:

  - Organized patterns (e.g., lines, arrays, circles)

  - Unorganized or random patterns

- I can draw pictures or use concrete materials to illustrate the same number of objects organized in different arrangements

- I can count the same arrangement of objects in a different order

  - (e.g., for the first count, start at the top of the set and go down and for the second count start at the bottom and go up)

- I can add one object to an existing set and identify the new count by "counting on"

  - (e.g., without having to recount the set or start over at 1)

- I can describe what happens to the counting sequence when an object is added to an existing set of objects

- I can label each set with the matching numeral when given a drawing, picture, or model of two sets of objects

- I can determine which is greater than or less than the other when given two numerals

- I can describe the comparison between two numbers between 1 and 10 using words and concrete materials, drawings, etc.

Declarative Knowledge

Students will understand:

- Counting involves one-to-one correspondence.
- One can count by different amounts (ones, tens, etc.).
- Numbers represent a quantity and a position.
- Numbers have a sequence.
- Counting is a way to find out how many.
- 'Greater than' means more, 'less than' means fewer, 'equal' means the same.
- Essential vocabulary: count, group, number, compare, greater than, less than, equal to.

Procedural Knowledge

Students will be able to:

- count out loud by ones to 100 starting at 0 by the end of the year

- recognize patterns in the counting sequence

- count out loud by tens to 100 starting at 0 (e.g., 0, 10, 20, ...)

- count forward out loud from any given number (1 to 99)

- write numerals to represent a given set of objects

- create a drawing or model using concrete materials to represent written numerals 0 to 20

- identify written numerals 0 to 20

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EVIDENCE OF LEARNING

Refer to the 'Formative Assessments' and 'Summative Assessments' sections.

Formative Assessments

- Self-Assessments/Student Friendly Scales
- White-board responses
- Exit Tickets
- Math Talks
- Participation
- Teacher Observation
- IXL

Summative Assessments

- Benchmark Assessment/SGO Assessment

RESOURCES (Instructional, Supplemental, Intervention Materials)

Everday Counts Calendar Math Grade K

IXL

Everday Mathematics Resources and Grade K Lessons:

1.3-1.9

1.11

2.1-2.2

2.4

2.6

2.9-2.10

3.1-3.2

3.4

3.7-3.13

4.1

4.3-4.4

4.6

4.8

4.11-4.13

5.1-5.3

5.6

5.8-5.9

5.11-5.12

6.3

6.6

6.11-6.12

7.1-7.3

7.5

7.7-7.9

7.11

8.3-8.4

8.6

8.10

INTERDISCIPLINARY CONNECTIONS

- Technology/Multimedia: Educational Tech Applications
- Career Readiness: Utilize Critical Thinking to Make Sense of Problems and Persevere in Solving Them
- English/Language Arts: Literacy suggestions:
  - Emily's First 100 Days of School
  - number picture book(s)
  - City by Numbers
  - birthday story
  - Five Little Chicks
  - Five Little Firefighters
  - Seven Blind Mice
  - Five Green and Speckled Frogs
  - Ten Black Dots
  - Rooster Is Off to See the World
  - Ten Little Fish
  - Roll Over! A Counting Song
  - Pigs at Odds: Fun with Math and Games
  - Go Away, Big Green Monster!
  - 3 Little Firefighters
  - "The Button Story" (Frog and Toad Are Friends)
  - Caps for Sale

- Meet the Teens
- Moja Means One: Swahili Counting Book
- We All Went on Safari
- One Hundred Is a Family
- How the Stars Fell into the Sky
- Mouse Count
- Equal Shmequal
- Pet Show!
- I Love Trains!
- This Train
- Dominoes Around the World
- The Best Vacation Ever
- This Is the Way We Go to School
- "The Tortoise and the Hair"

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.

- modify activity
- simplify directions
- check-ins
- visuals
- manipulatives
- wait time
- additional time for tasks
- verbal responses
- illustrations