Unit 1: Domain: Counting and Cardinality

Content Area: **Mathematics**
Course(s): **Mathematics**
Time Period: **Marking Period 1**
Length: **12 Weeks**
Status: **Published**

Unit Overview

In this domain, students will be able to represent, count and write numbers numbers from 0 to 20. They will be able to understand the relationship between numbers and quantities and their arrangement. They will compare numbers using matching and counting strageties. The will be able to count forward from a given number and also count to 100 by ones and tens.

Standards

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

Essential Questions

- What do numbers convey?
- How can numbers be expressed, ordered, and compared?
- What are different ways to count?
- In what ways can items be grouped?
- In what ways can numbers be composed and decomposed?
- How are place value patterns repeated in numbers?

Application of Knowledge and Skills...

Students will know that...

- Mathematics content and practices can be applied to solve problems.
- Numbers can be classified and represented in different ways.
- Numbers can be used for different purposes.
- Numbers, expressions, algebraic expressions or equations can be compared in different ways.
- Relationships can be described and generalizations made for mathematical situations.
- The base-ten numeration system is used for recording numbers, groups of ten and place value.
- The set of real numbers is infinite and ordered and can be associated with a unique point on the number line.
- Whole numbers, integers and fractions are real numbers.

Students will be skilled at...

- counting and writing numbers to 100 on the hundred chart.
- counting groups of 10
- counting objects to 30.
- define the following vocabulary words in each topic: Topic 1: one, two, three, four, five, number, count Topic 2: column, row, fewer, more, some number of, same as, 1 more (than), 2 more (than), 1 fewer (than), 2 fewer (than), zero, none, as many, order, fewest, most, greater, less Topic 3: six, seven, eight, nine, ten, growing pattern Topic 4: forward, order, number line, Topic 5: eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty Topic 6: hundred chart, row, column, count by 10's
- identifying growing patterns and predicting what comes next
- identifying objects in a given set regardless of arrangements.
- recognizing a given set of objects that is greater/less.
- recognizing and writing numbers in a sequence
- representing, counting and writing the numbers 0-20.
- understanding that zero means none.
- using one-to-one correspondence to compare objects.
- utilizing counting to identify a number that is 1 more/fewer than another number.
- utilizing counting to identify a number that is 2 more/fewer than another number.
- utilizing the vocabulary words more, fewer or the same to compare numbers or objects in a given set.

Assessments

- benchmark test
- end of year test- administered after completing program
- Placement Test-administered prior to delivering the program
- topic math projects
- topic quick check
- topic tests

Activities

Problem of the Day-Present a daily problem that serves as a review from the previous day's lesson.

Vocabulary - Create a chart for each new vocabulary word that includes the word's meaning and an example or use vocabulary cards as flash card game

Station activities- Each section has center activities to reinforce skill (leveled)

- Clip and Cover: Students answer questions and try to cover four spaces in a row on a gameboard to win.
- Display the Digits: Students answer the problem and display the tile that rpresents the answer.
- Quick Questions: Toss number cubes and answers questions.
- Teamwork: Students in turn explain the steps in a multi-step process.
- Think Together: Students choose and discuss answers to problems.
- Tic Tac Toe: Students use algebraic rules to compute solutions to problems
- Toss and Talk: Students toss number cubes and explain how to solve resulting problems.

STEM - Certain sections have Going Digital integrating technology such as:

- Counters Math Tools p.18
- Counters Math Tools p.88
- Counters etools p. 106

Interactive Learning - Problem-Based Interactive learning activities at the beginning of each topic such as using tools, structure,reasoning, generalizing, assessing reasonableness and modeling.

Topic Opener Projects - There is a math project for each topic (Topic 1-6). See Cross Disciplinary instruction for project and page numbers.

Practice work - Communicator practice can be done using Independent work and problem- solving practice problems in each section.

How Many Are There?

Use groups of objects to investigate numbers from 0 to 5. Discussion questions: Are there the same number of ___ as ___? How can you find out? How many more ___ do you need so that each group is the same?

Our Number Books

Distribute ten pieces of paper and crayons to pairs of students. Explain that they are going to make number books. Have each partner show a number of objects, draw them on a piece of paper, and write the numeral. Ask pairs to work together to make a page for each number, one through ten. After children have completed their book, discuss the following: How did you make sure that your drawing showed the correct number of objects? How did you make sure that you made a page for each number, one through ten? How did you know the order for your pages?

All the Way to Thirty

Distribute bags containing eleven to thirty small objects, ten frames, and number lines to the children. Ask them to use any method they choose to find out how many things are in their bags. Then have them check their answer using a different method. Have them write the numerals on post-its and stick them to their bags. When the children are finished, discuss the following: How many pieces were in your bag? Name two ways you found out the number of pieces. What did you do if you didn't get the same number for both ways you tried? Have children line up in order according to the number of things in their bags and answer the questions: Who should line up first? Why? Who will be last? Why?

Activities to Differentiate Instruction

General strategies for modification of this curriculum for students with special needs, ELL, and gifted learners:

- **General strategies:**
  - preferential seating
  - manipulatives
  - modified workbook pages
  - practice or enrich homework pages
- **Center activities** - There are leveled center activities for each section. There is a separate activity for "Intervention", and then "On-Level" and "Advanced" are in spiral book.
- **Leveled practice pages** - There are three leveled (Reteaching, Practice, and Enrichment) sheets that can be used for practice or homework.
- **Math Concept Readers:** These readers allow the student to read the story at different levels- above

level, on level, and below level. (also available on line with audio) Complete the Think and Respond and Write Math questions at the conclusion of each book.

- **Assessment**- Using Quick Check Review can determine differentiated instruction levels using sample answers and using the rubric at the Close/ Assess and Differentiate section in the teacher edition.

Content specific modification for students with special needs, ELL, and gifted learners:

- **Topic 1**
  - **Below level students:**
    - Most young children come to kindergarten knowing some beginning part of the counting sequence. However, the ability to recite the number names in order does not guarantee understanding of the numbers.
    - Children should move objects in a set as they recite the counting sequence so that the number they are saying is reflected in the set of objects they have moved.
    - Provide children performing below level with numerous opportunities to practice representing the numbers 1 through 5 with various classroom objects.
  - **Students with special needs:**
    - Review with special needs children the relationship between counting and written numerical symbols.
    - Start with tactile objects, such as crayons, paper clips, or other classroom supplies that can be easily counted. Then , model for children the relationship between the tactile representations of the number 1-5 and their written numerical symbols.
    - Repeat this daily, remembering to use consistent math language words such as number and count.
  - **ELL**
    - Repeating oral language practice of the number words for 1 through 5 will help English learners remember and understand number words.
    - Writer the number words one to five on the board with the corresponding numerals. Have children draw an object to illustrate each word. Relate these illustrations to the words' mathematical definitions.
  - **Advanced/Gifted:**
    - Children with a strong developing number sense will be able to extend what they have learned about the numbers 1 through 5.
    - Provide advanced children with ample opportunities to practice counting to 5 and to practice reading and writing numbers 1 through 5. You may wish to use both concrete and abstract representations of numbers.

- **Topic 2:**
  - **Below level students:**
    - Help children understand that they can build on the concepts of equal groups and more introduced in Topic 2.
    - Show a group of objects such as 4 cubes. Model for children how to make a group that has 1 more object than another group, or 1 fewer object.
    - Provide numerous opportunities for children to practice making groups that have 1 more, 2 more, 1 fewer, and 2 fewer.
  - **Students with special needs:**
    - Review with children the concepts of more, fewer, and same.
    - Using various manipulatives, demonstrate these concepts and ask the children to replicate your model. For example, show a group of 2 blocks a group of 8 blocks and ask which groups has more. Then show another group of 2 objects and ask the children

to make a group that shows more than 2. Focus on the comparison of the 2 groups, rather than the numeric value of the objects in the group, using the math words more and fewer to describe them.
        - Use a variation of this activity to demonstrate the concept of same as by creating groups with equal numbers of objects.
    - **ELL**
        - Repeated oral language practice of terms will help English learners remember the words and associate them with concepts.
        - **Emerging:** Write the numeral 1 on the board and ahe the children hold up 1 object and say the word one. Repeat with numerals 2-5
        - **Expanding:** Write the words 1 more and 2 more on the board. Read each term together with children and help children illustrate each term with manipulatives. Repeat with 1 fewer and 2 fewer.
        - **Bridging:** Write the word order on the board. Model how to order the numerals 0 to 5. Then ask children to trace the number that comes after 4 with red chalk. Continue with other numbers.
    - **Advanced/Gifted:**
        - Children who quickly relate quantity to number will understand that 3 cubes and 3 dogs are both 3, no matter the item.
        - Write 2 different numbers from 0 to 5 on the board. Ask children to draw sets of dots for the numbers and then circle the larger number.

- **Topic 3:**
    - **Below level students:**
        - Understanding the quantities represented by a number is not the same as counting and reciting the number.
        - Provide children performing below level with opportunities to recognize sets of objects with varying quantities. For example, when they see a set of 2 objects and a set of 9 objects, they should immediately recognize that the set of 9 shows the greater quantity. Repeated counting of objects in varies sets will help reinforce association of the numeral with the quantity.
        - Provide children performing below level with numerous opportunities to practice representing the numbers 1 through 10 with various classroom objects.
    - **Students with special needs:**
        - Review with special needs children the numbers 6 through 10 and the quantities represented by each.
        - Using various manipulatives, demonstrate a set of 6 objects and have children count them. Have children hold 6 objects and count them as they put them in a row. Then have children make their own set of 6 using different objects.
        - Have children count the objects in their set as they touch each one. Have them try counting the objects as they touch them them with their eyes closed. Repeat the appropriate number with children after counting each set.
        - Remember to use consistent mathematical terms such as count and number as you describe the process.
        - Repeat this activity daily with different objects.
        - Repeat with sets of 7 through 10.
    - **ELL**
        - Repeated oral language practice of the terms that are used in illustrating the concept of quantity will hep English learners remember the words and associate them with concepts.

        - **Emerging:** Write the numeral 6 on the board, point to the numeral, and have children repeat the word as you count out 6 objects. Repeat with numerals 7 through 10.

        - **Expanding:** Place 10 dried beans in a row. Have children count with you as you point to each one. Repeat with a row of 9, a row of 8, etc.
        - **Bridging:** Draw a number line from 0 through 10 on the board. Have children start at 0 in a whisper and make their voices increasingly louder until they are shouting ten.
    - **Advanced/Gifted:**
        - Children who quickly grasp the concept of quantity represented by written symbols may learn the mathematical language and symbols for simple addition.

- **Topic 4:**
    - **Below level students:**
        - Some children may need extra practice to master comparing numbers.
        - For children who have trouble identifying more and fewer numbers of items, have them use one-to-one correspondence to match items.
    - **Students with special needs:**
        - Demonstrate with special needs children the order of number 1 through 10 by using their fingers to count. Have children start counting with their pinkies, instead of their thumbs, so they do not have trouble keeping their ring and pinky fingers down.
        - Understanding number order will help children compare numbers.
        - Help children see that when we count, the next number is always 1 more than the given number and the number before is always 1 less.
    - **ELL**
        - Repeated oral language practice of the terms that re used to compare numbers will help English learners remember and understand the process.
        - **Emerging:** Compare two unequal groups of objects, using the word greater to describe the group that has more. Then compare the two groups again, using the word less to describe the group that has fewer.
        - **Expanding:** Model the above activity and then have children repeat it, using the words greater and less.
        - **Bridging:** Have children create two groups of objects that have an unequal number of objects. Have children compare the groups, using the words greater and less.
    - **Advanced/Gifted:**
        - Some children will be able to extend their knowledge and number sense.
        - Provide advanced children with ample opportunities to practice mental math in which they compare numbers.

- **Topic 5:**
    - **Below level students:**
        - Some children find it difficult to associate numbers learned with the names for numbers.
        - Children need to connect and apply the skills of reciting number names and one-to-one correspondence to build understanding of a number. Provide children performing below level with numerous opportunities to practice reading and writing the numbers 11 to 20.
        - Remind children that they have already learned how to write the numerals they will need to write 11 through 20.
    - **Students with special needs:**

        - Some special needs children may be able to count through larger numbers but may have difficulty reading and writing them.
        - Provide a variety of materials for children to use as they practice writing numbers such as chalk, sand, cookie dough, and clay. Have them trace each number with a finger as they identify it.
    - **ELL**
        - Repeated practice tracing, writing, and speaking numbers 11 to 20 will help English learners remember them.
        - **Emerging:** Write the numerals 11 to 20 on the board. Ask children to trace each number with colored chalk and say the number aloud.
        - **Expanding:** Write the number words eleven to twenty on the board with the corresponding numerals. Have children draw an object to illustrate each word.
        - **Bridging**: Write the number words and numerals for 11 to 20. Have children trace each numeral and say the word it represents.
    - **Advanced/Gifted:**
        - Some children will be able to use advanced reasoning skills in order to recognize, read, and write numbers to 20.
        - Provide advanced students with ample opportunities to practice identifying number words and numerals to 20 in random order.

- **Topic 6:**
    - **Below level students:**
        - It may be difficult for children to find number patterns in which the pattern is embedded in how the numbers in a sequence grow. Show children how counting by 2s is a pattern in which the next number in the sequence is 2 more each time.
        - Provide below-level students with numerous opportunities to practice skip-counting, first using the hundred chart, and then applying these skills to various groups of objects.
    - **Students with special needs:**
        - Some children may find it difficult to count groups of 10s and then switch to counting an by 1st. Begin by counting on from the decade numbers children are familiar with such as 10 or 20. Start with tactile objects, such as crayons or paper clips, or other classroom supplies that can be counted in large numbers. Count the 10s slowly, and pause before counting on by 1st.
        - Repeat this daily, remembers to use consistent math language, using terms such as count by 10s.
    - **ELL**
        - Repeated oral language practice of the vocabulary words used in this lesson will help English learners remember and understand how to count and find patterns to 100.
        - Have an even number of children stand in a line. Say, "I am going to count by 2s". Count the group of children by 2s. Then have children repeat the numbers.
    - **Advanced/Gifted:**
        - Children with a strong developing sense of numbers and counting will be bale to extend what they learned about skip counting.
        - Provide advanced children with additional opportunities to practice county by 2s, 5s, and 10s in order to count large groups of objects.
        - As they count various groups of objects, lead children to conclude that they can choose to count by 2s, 5s, or 10s, depending upon how many objects are in a group.

Integrated/Cross-Disciplinary Instruction

Reading and Writing: The Worldscapes Readers present math problems to be solved within the context of nonfiction text. Think and Respond and Write Math questions can be found at the conclusion of the books. Language Arts/Science/Social Studies:

- Worldscapes Readers
- Topic Opener Math Projects
- Writing in Math/Math Journals
- Interactive Notebooks

Topic 1: Five Little Ducks:Social Studies: Research things special to New Jersey. Then have students draw pictures of those things and label with corresponding numbers 1-5. p. 2

Topic 2: More, Fewer, Less: Social Studies: Show students 2 flowers. Then have students draw, label and read a picture that shows one more. p. 22

Topic 3: Every Body Counts: Social Studies: Research things special to New Jersey> Then have students draw pictures of those things and label with corresponding numbers 6-10 p. 46

Topic 4: Ten Flashing Fireflies: Art: Have students draw pictures in rows of 10, more than 10 and fewer than 10 and compare.

Topic 5: One Moose, Twenty Mice: Literature: Have students choose a number from 13-20. Next draw that many of their favorite fruit in a ten frame pattern. p. 92

Topic 6: One is a snail ten is a crab: Art: Have children draw 10 state flowers. Then label and count. p.110

DRAMATIC PLAY

How Many for Dinner?

Objective - identify one-to-one correspondence

Procedure - set a table for different numbers of guests

MUSIC

This Beat Counts

Objective - sets to ten

Procedure - partners take turns: one striking a drum the number of times shown on a card and one counting the number of beats heard

BLOCKS

Building Structures

Objective - recognize quantities to thirty

Procedure - have small groups of children choose a number card from eleven to thirty and construct a building using that many blocks

Resources

Topics Categories in book form:

Topic 1: One to Five

Topic 2: Comparing and Ordering 0-5

Topic 3: Six to Ten

Topic 4: Comparing and Ordering Numbers 0-10

Topic 5: Numbers to 20

Topic 6: Numbers to 100

Master Enrichment pages

Master Reteaching pages

Master Practice pages

Student Edition workbook

On line Resources available at www.pearsonrealize.com

- Teacher Edition (TE) Textbook
- Student Edition (SE) Textbook
- Tests on line
- Concepts videos
- Math Tools

21st Century Skills

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.
CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.