Unit 1: Recognizing, Counting, and Comparing Numbers 0 to 20

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Unit 1: Recognizing, Counting, and Comparing Number 0-20

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Mathematics: Kindergarten

Unit 1: Recognizing, Counting, and Comparing Numbers 0-20

Belleville Board of Education

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Unit Overview

Unit 1 will cover five topics including (T1) Numbers 0-5, (T2) Comparing Numbers 0-5, (T3) Numbers 6-10, (T4) Comparing Numbers 0-10, and (T9) Counting Numbers to 20.

Enduring Understandings

Topic 1 focuses on:

- Counting tells how many are in a group, regardless of their arrangements or the order in which they were counted. The last number said when counting a group is the total. Counting is cumulative.
- There is a unique symbol that goes with each number word.
- Zero is a number that tells how many objects there are when there are none.
- There is more than one way to show a number.
- There is a specific order to the set of whole numbers.
- Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.

Topic 2 focuses on:

- Two groups of objects are equal in number if they can be directly matched , one-to-one,with no extras in either group.
- Two groups of objects can be directly compared using a matching process.
- Two sets of objects can be compared by number using counting strategies, which is a more efficient method than matching.
- Two numbers can be compared by using the number counting sequence. A number represents a quantity greater than another quantity if it is later in the sequence.
- Good math thinkers use math they know to show and solve problems.

Topic 3 focuses on:

- Counting tell how many are in a group, regardless of their arrangement or the order in which they were counted. The last number said when counting the group is the total.
- Counting it cumulative.

- There is a unique symbol that goes with each number word.
- There is more than one way to show a number.
- Good math thinkers look for patterns in math to help them solve problems.

Topic 4 focuses on:

- In comparing two numbers, the group with more objects is greater in number than the other. The group with less objects is fewer in number than the other.
- In a pair of numbers the number that tells more is greater. The number that tells fewer is less.
- Two groups can be compared by counting the number of objects in each group and finding the position of each number with in the counting sequence.
- Two numbers can be compared by finding the position of each number with in the counting sequence.
- There is a specific order to a set of whole numbers.
- Good math thinkers look for things that repeat in a problem. The use what they from one problem to help solve other problems.

Topic 9 focuses on:

- There is a unique symbol that goes with each number word.
- Adding parts together to make a whole is one interpretation of addition. Equations using + and = can be used to show parts of a whole.
- Counting tells how many are in a set, regardless of their arrangements or the order in which they were counted. The last number said when counting a set is the total. Counting is cumulative.
- Good math thinkers know how to think about words and numbers to solve problems.

Essential Questions

(T1): How can numbers from 0 to 5 be counted, read, and written?

(T2): How can numbers from 0-5 be compared and ordered?

(T3): How can numbers from 6 to 10 be counted, read, and written?

(T4): How can numbers from 0 to 10 be compared and ordered?

(T9): How can numbers to 20 be counted, read, written, and pictured to tell how many?

Exit Skills

Topics 1, 2, 3, 4, and 9 Cluster:

- Identify and compare numbers 0-20

- Describe quantities using math vocabulary

- Explain one-to-one correspondence

- Point out various numerical displays with quantities that need to be identified and counted

New Jersey Student Learning Standards (NJSLS)

The Math Practices, as put forth by the National Council of Teachers of Mathematics (NCTM), are connected within all lessons:

MP.1 - Make sense of problems and persevere in solving them.

MP.2 - Reason abstractly and quantitatively.

MP.3 - Construct viable arguments and critique the reasoning of others.

MP.4 - Model with mathematics.

MP.5 - Use appropriate tools strategically.

MP.6 - Attend to precision.

MP.7 - Look for and make use of structure.

MP.8 - Look for and express regularity in repeated reasoning.

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.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.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	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.

Interdisciplinary Connections

LA.RF.K.1.A	Follow words from left to right, top to bottom, and page by page.

LA.W.K.2	Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.
LA.W.K.8	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
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).
LA.SL.K.1.B	Continue a conversation through multiple exchanges.
LA.SL.K.3	Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
LA.SL.K.5	Add drawings or other visual displays to descriptions as desired to provide additional detail.

Learning Objectives

After completing Unit 1, students will be able to:

Topic 1:

- Count 1, 2, and 3 objects
- Count groups of 1, 2, and 3 objects shown in different ways
- Read and write the numbers 1, 2, and 3
- Count 4 and 5 objects
- Count groups of 4, and 5 objects shown in different ways
- Read and write the numbers 4 and 5
- Use zero to tell when there are no objects
- Read and write the number zero
- Show ways to make 5
- Count up to the number 5
- Use math to explain what you know about counting

Topic 2:

- Compare groups to see whether they are equal by matching
- Tell whether one group is greater in number than another group
- Tell whether one group is less in number than another group
- Compare groups by counting
- Compare numbers
- Use objects, drawings, and numbers to compare numbers

Topic 3:

- Count to the numbers 6 and 7
- Read and write the numbers 6 and 7
- Count to the numbers 8 and 9
- Read and write the numbers 8 and 9
- Count to the number 10
- Read and write the number 10
- Show how to make a group of 10
- Use counting patterns to solve a problem

Topic 4:

- Compare groups of up to 10 numbers
- Compare groups of numbers using numerals to 10
- Compare groups of numbers by counting
- Compare two numbers
- Count groups of numbers to 10
- Repeat something from one problem to help solve another problem

Topic 9:

- Count and write numbers 11 and 12
- Count and write the numbers 13, 14, and 15
- Count and write the numbers 16 an 17
- Count and write the number 18, 19, and 20
- Count forward from any number to a number within 20
- Count to find how many are in a group
- Count and use reasoning to count and write numbers to 20

Suggested Activities & Best Practices

- "Big Collectors" Science Center Activity, Pearson Realize pg. 1M, counting 1-5

- "Sand Table" Center Activity, Pearson Realize, pg. 1M, writing 1-5

- "Follow the Dots" Writing Center Activity, Pearson Realize, pg. 1M

Assessment Evidence - Checking for Understanding (CFU)

- Common Formative Assessments

- Common Summative Assessments
- District Benchmark (Benchmark)
- Do Now
- Exit Tickets
- Higher-order Questioning / Rich Discussion
- Journals
- KWL Chart
- Performance Task (Alternative)
- Quick Check (enVision Math)
- Quick Write
- Quizzes (Formative)
- Rubrics
- Study Guide
- Surveys
- Teacher Observation Checklist
- Think-Pair-Share
- Turn-and-Talk / Share-out
- Unit Assessments (Summative)
- WIK / WINK

Primary Resources & Materials

EnVision Math Teacher Edition

PearsonRealize.com

Ancillary Resources

New Jersey Student Learning Standards for Mathematics

NJSLS Mathematics Crosswalk

IXL Learning

NCTM Illuminations

Technology Infusion

Alignment to 21st Century Skills & Technology

Mastery and infusion of 21st Century Skills & Technology and their alignment to the core content areas is essential to student learning. The core content areas include:

- English Language Arts;
- Mathematics;
- Science and Scientific Inquiry (Next Generation);
- Social Studies, including American History, World History, Geography, Government and Civics, and Economics;
- World Languages;

- Technology;
- Visual and Performing Arts

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.CRP6.1	Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.
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.
CRP.K-12.CRP11.1	Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
CRP.K-12.CRP12.1	Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.
CAEP.9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
TECH.8.1.2.A.CS1	Understand and use technology systems.
TECH.8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
TECH.8.2.2.A.1	Define products produced as a result of technology or of nature.
TECH.8.2.2.A.2	Describe how designed products and systems are useful at school, home and work.

21st Century Skills/Interdisciplinary Themes

- Communication and Collaboration
- Creativity and Innovation

- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Life and Career Skills
- Media Literacy

21st Century Skills

- Civic Literacy
- Environmental Literacy
- Financial, Economic, Business and Entrepreneurial Literacy
- Global Awareness
- Health Literacy

Differentiation

- Use the "Quick Check" feature on Pearson Realize (embedded in each Unit) to help determine the strategy for differentiating instruction; the "Assess and Differentiate" page will prescribe the differentiated instructional activity

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments aloud
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology

- Auditory presentations
- Large print edition
- Dictation to scribe

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal-setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

Special Education Learning (IEP's & 504's)

- 3D Triangle Intervention Activity, pg. 23A, Pearson Realize

- Use suggestions under Technology Center section in Pearson Realize to target students with disabilities

- Use the Pacer Center Action Information Sheet for research-based ideas on accommodations and modifications

- Allow for open-note/open-book assessments
- Check classwork frequently for understanding
- Conduct preview of content, concepts, and vocabulary
- Consider behavior management plan
- Implement accommodations/modifications as dictated in the student's IEP/504 plan
- Modified test content/format
- Modified written assignments
- Multi-sensory presentation
- Pre-annotate text
- Preferential seating
- Promote pair work
- Provide extended time on various assignments
- Provide printed/online copies of lesson notes
- Secure attention before providing instruction/directions
- Use assistive technology

English Language Learning (ELL)

- Use Teaching Tool 48 as a graphic organizer to help students connect a visual to the vocabulary term

- Use Teaching Tool 49 to connect students' understanding of vocabulary terms with actual meanings

- Use suggestions under English Language Learners section in Pearson Realize to target beginning, intermediate, and advanced learners

- Use suggestions under Technology Center section in Pearson Realize to target ELLs

- Allow for multiple student revisions
- Allow for open-note / open-book assessments
- Allow multiple forms of student products (projects, models, slide-shows, etc.) to demonstrate student learning
- Ask and give information using key words
- Demonstrate listening comprehension by responding to questions
- Develop basic sight vocabulary
- Differentiate assessments to reflect selected objectives
- Express ideas in single words

- Leverage computer spell checker
- Modify reading assignments to correlate with lexile level
- Peer tutoring / Peer note-taking
- Speak using content area vocabulary in context
- Teacher-created Study Guide
- Use prior experiences to understanding meanings
- Use videos, illustrations, pictures, and drawings to explain or clarify

At Risk

- Decrease the amount of work represented or required by assigning the "Do You Understand?" and the "Do You Know How?" sections of each lesson

- Use suggestions under Technology Center section in Pearson Realize to target at-risk students

- Allow for multiple student revisions
- Allow for open-note / open-book assessments
- Allow multiple forms of student products (projects, models, slide-shows, etc.) to demonstrate student learning
- Allow students to select from given assignment choices
- Differentiate assessments to reflect selected objectives
- Mark students' correct and acceptable work, not the mistakes
- Peer tutoring / Peer note-taking
- Promote student collaboration on in-class / outside class assignments
- Reduce lengthy outside reading assignments
- Teach key aspects of a topic - eliminate non-essential information
- Teacher-created Study Guide
- Use authentic assessments with real-life problem-solving
- Use videos, illustrations, pictures, and drawings to explain or clarify

Talented and Gifted Learning (T&G)

- Use suggestions under Extension for Early Finishers section in Pearson Realize to target advanced learners

- Use suggestions under Advanced Activity Centers to target advanced learners e.g. "Cover Three" modified game for Lesson 1-2

- Administer subsequent Unit Assessment to determine level of proficiency
- Allow creation of a class newspaper to distribute
- Allow students to work at a faster pace
- Complete activities aligned with above grade-level text using Benchmark results
- Consider parental input about the education of their gifted children

- Create a blog or social media page about a topic of interest
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Involve students in academic contests
- Promote advanced problem-solving
- Remember that gifted children may not excel in all areas
- Set individual goals
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge

Sample Lesson

Unit Name: Comparing and Recognizing Numbers 0-5, Lesson 1-1: Count 1, 2, and 3 (pg. 11)

NJSLS: K.CC.B.4a. Understand the relationship between numbers & quantities, connect counting to cardinality.

Interdisciplinary Connection: Language Arts

Statement of Objective: Count 1, 2, and 3

Anticipatory Set/Do Now: Activate prior knowledge by counting objects throughout the room

Learning Activity: Read the story "Count the Eggs;" act out the story and then color (pg. 10)

Student Assessment/CFU: Observation

Materials: Counters, Crayons, plastic self-sealing bags, small objects, dried pasta, or dried beans

21st Century Themes and Skills: Interactive Math Story

Differentiation/Modifications: Refer to page 11A

Integration of Technology: SmartTV