

Winchester Math Curriculum Grade K

Subject	Mathematics
Grade/Course	Kindergarten
Unit of Study	Unit 2: Numbers to 10
Pacing	October
Unit Summary	Kindergarteners continue to develop the major concepts addressed in unit 1 related to counting and recognizing quantities; number sequence, one-to-one correspondence, cardinality, subitizing. Unit 2 emphasizes combination of number that make five, and also introduces the process of comparing quantities within 10.
<u>Overarching Mathematical Practices</u>	
<p>K.MP.1 Make sense of problems and persevere in solving them.</p> <p>K.MP.2 Reason abstractly and quantitatively.</p> <p>K.MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>K.MP.4 Model with mathematics.</p> <p>K.MP.5 Use appropriate tools strategically.</p> <p>K.MP.6 Attend to precision.</p> <p>K.MP.7 Look for and make use of structure.</p> <p>K.MP.8 Look for and express regularity in repeated reasoning.</p>	
<u>Unit CT Core Content Standards</u>	
<p><u>K.CC.A.1</u>- Count to 100 by ones and by tens.</p> <p><u>K.CC.A.3</u>- 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).</p> <p><u>K.CC.B.4a</u>- 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.</p> <p><u>K.CC.B.4b</u>- 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.</p> <p><u>K.CC.B.4c</u>- Understand that each successive number name refers to a quantity that is one larger.</p> <p><u>K.CC.B.5</u>- 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.</p> <p><u>K.CC.C.6</u>- 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.</p> <p><u>K.OA.A.1</u>- Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.</p> <p><u>K.OA.A.3</u>- Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).</p> <p><u>K.OA.A.4</u>- 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 equation.</p> <p><u>K.MD.B.3</u>- Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.1</p>	

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K.G.A.1- Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.

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

K.G.B.4- Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

K.G.B.6- Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*

"Unwrapped" Standards

Skills	Content
Count	<ul style="list-style-type: none"> ● to 100 ● to answer "how many?" ● out objects for a given number ● the number of objects in a category
Write	numbers 0 to 20
Represent	<ul style="list-style-type: none"> ● a number of objects with a written numeral ● addition and subtraction with objects, fingers, drawings, etc...
Say	number names when counting objects
Understand	<ul style="list-style-type: none"> ● the last number name tells the number of objects counted ● each successive number refers to a quantity one larger
Identify	one group of objects is greater than, less than or equal to another group of objects
Decompose	numbers less than or equal to 10 in pairs more than one way
Record	number decomposition by drawing or equation
Find	from a given number 1-9 what makes 10
Classify	objects into given categories
Sort	objects in categories by count
Describe	<ul style="list-style-type: none"> ● objects in the environment using names of shapes ● the relative position of objects ● similarities, differences, parts, and attributes of shapes
Name	shapes correctly
Compare	shapes
Compose	simple shapes to form larger shapes
Essential Questions	Corresponding Big Ideas
1. How does counting help us in our everyday lives?	1. Everything can be counted. Number names tell us how many objects are in groups and allow us to count in order, compare groups of objects, and solve problems.

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2. What are ways to identify and describe shapes?	2. Shapes can be identified by appropriate name and described by location, attributes, and measurements.	
Evidence of Learning - Assessment		
Pre/Post Assessment	Interim Assessment	Additional Evidence of Learning
<ul style="list-style-type: none"> Number Corner Checkup 1 - End of October 	Count and Compare Checkpoint - M1, S5 Numbers and Number Racks Checkpoint - M3, S4	Options: <ul style="list-style-type: none"> Exit tickets Observational Assessments: <ul style="list-style-type: none"> Count and Compare Dots - M1, S5 Number and Number Racks - M2, S4 Which Bug Will Win" - M3, S4 Beat You to Ten - M3, S6 Pattern Block Puzzles - M4, S4
Smarter Balanced Interim Assessment		
<p>Smarter Balanced General Scoring Rubrics - 4 Rubrics included - Score Pt 4 to Score Pt 1</p> <ul style="list-style-type: none"> Smarter Balanced Interim Blocks <ul style="list-style-type: none"> Interim assessment blocks may be used for a variety of assessment purposes, including: pre/post, interim and formative (additional evidence of learning). The Style Guide, which aligns with the expectations of Smarter Balanced Assessments, will support the creation of unit- and standard-aligned items for instructional use. <p>Interim Assessment Block - access through CSDE Assessment Portal</p> <ul style="list-style-type: none"> The items on the interim assessments are developed under the same conditions, protocols, and review procedures as those used in the summative assessments. Therefore, they assess the same Common Core State Standards, adhere to the same principles of Universal Design in order to be accessible to all students, and provide evidence to support Smarter Balanced claims in mathematics and ELA/literacy. The interim assessment items are non-secure but non-public. This means that educators may view the items, however, they should not be made public outside of classroom, school or district. 		
Learning Plan		
Researched-based Instructional Resources and Methods		
<p>Sequence of Instruction: Number Corner→ Problem + Investigations→Work Places→Home Connections</p>		

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Bridges Number Corner: The focus areas for Number Corner (workouts that introduce, reinforce, and extend skills) aligned to Unit 2 are:

Counting

- Practice a variety of counting skills
- Build a sense of landmark numbers 5 and 10
- Identify and count teen numbers
- Sort, count, compare sets of objects
- Estimate the number of objects

Number Sense

- Combine objects to find a total
- Determine how many more from a give number to make 10
- Make combinations for 5
- Represent quantities and combinations on a five-frame
- Write numerals
- Use and model words that indicate direction

Bridges- Whole Group, Small Group, and Independent Problem Center Activities

Module 1	Module 2	Module 3	Module 4
Problem + Investigation ● Sessions 1-4 Work Place ● Sessions 1-5 Assessment ● Session 5 Home Connection ● Sessions 2, 5	Problem + Investigation ● Sessions 1, 2, 3, 5 Work Place ● Sessions 1-5 Home Connection ● Sessions 2, 5	Problem + Investigation ● Sessions 1, 2, 3, 5 Work Place ● Sessions 1-6 Assessment ● Session 4 Home Connection ● Sessions 3, 6	Problem + Investigation ● Sessions 1-3 Work Place ● Sessions 1-4 Home Connection ● Sessions 2, 4

Instructional Support

Possible Misconceptions	Teacher Moves
<ol style="list-style-type: none"> 1. Watch for students who find it confusing to say one number name with one object as they count (one to one correspondence). 2. Watch for students who double count an object. 3. Students may see 5 items spread out as different from 5 items close together. 	<ol style="list-style-type: none"> 1. Begin with a smaller number of objects and model saying the number name as you physically move the object. Have students do the same. 2. Physically moving the object and saying one number name for each object will help to reinforce one to one correspondence. 3. 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.

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<p>4. Some students may be able to match a quantity with a number (or numeral) but cannot produce that number of objects when given materials or asked to draw a picture.</p> <p>5. Students who have trouble with the vocabulary of comparison.</p> <p>6. Students who are struggling to compare the size of two sets of objects.</p> <p>7. Although it is appropriate for kindergarteners to use their finger 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.</p> <p>8. Students who are more likely to use finger counting and rote memorization when working with addition and subtraction.</p>	<p>4. Looking for a specific quantity when given a choice of collections has a lower level cognitive demand than having to produce a set of objects given a number. This standard will take time to develop.</p> <p>5. These students need more opportunities to compare obvious amounts and practice the different ways to describe the comparison. For example, there are more teddy bear counters than chips. There are fewer chips than teddy bear counters.</p> <p>6. They should line the set of objects up with one to one correspondence. If they are unable to keep the objects lined up, provide a sheet of one-inch graph paper and keep the items small enough so one item can fit in each square. Ask questions such as; Which row has more? How do you know? Which row has fewer (less)? How do you know? Keep the number of objects in each set within the range of student success and then build using greater numbers of items. Continue giving students opportunities to describe their thinking and to use comparison vocabulary..</p> <p>7. Students need many opportunities 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.</p> <p>8. Provide students with time to draw pictures before working with numerical expressions and equations.</p>
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Vocabulary and Representations

Tier 2 (Academic Vocabulary)	Tier 3 (Domain Specific Vocabulary)
above add* attribute (s) below behind beside	five-frame graph hexagon* horizontal numeral + rectangle*

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<p>bottom compare compose create different eight* extend fewer (less than)* five* four* greater than* half in all in front of left middle next to nine* number one* pattern* problem record right same six* seven* tally ten* three* top total two* zero*</p>	<p>rhombus* square* ten-frame triangle* trapezoid</p> <p>*Smarter Balanced Vocabulary is focused on major mathematical concepts. (Not all possible words have been identified by SBAC)</p> <p>+ Students are not responsible for these vocabulary words at this grade level, however they should have some understanding of the mathematical concept.</p>
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Mathematics Teaching Practice Resources

1. **Bridges** - Reference Math Practices in Action Notes - The notes identify how particular mathematical practice is employed in a specific activity. There also recommendations for the use of other resources provided by the publisher.
2. [Math Practices Teacher Question Starters](#)
3. [Implementing the Standards of Mathematics Practice](#)
4. [Illustrating the Standards of Mathematical Practice](#)
5. [Math Practice Posters K-1](#)
6. [K - Standards + Practices Explanations and Examples](#)
7. [Illustrative Math – Grade K](#) - Resources and activities for the grade aligned by standard.

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8. [Number Sense Trajectory](#)
9. [Number Talks Matter - Number Talks at a Glance](#) and Fluency without Fear
10. Teaching Channel - [Beyond Fingers; Place Value and Numbers 11-19](#)
11. [Early Mathematics - A Resource for Teaching Young Children Mathematics](#)
12. [Lessons for Learning](#) - A Collection of Math Tasks/Instructional Ideas
13. [Building Conceptual Understanding and Fluency Through Games](#)
14. [Teacher/Student Actions](#)
15. [Fletcher Three Act Tasks](#)
16. [Teaching Math to Young Children Practice Guide](#) - The Teaching Math to Young Children practice guide presents five recommendations designed to capitalize on children's natural interest in math to make their preschool and early elementary school experience more engaging and beneficial.
17. LearnZillion - Lesson Plans and Activities
 - [Count and Compare](#)
 - [Marbles in a Jar](#)
15. K-5 Math Teaching Resources
 - [Roll and Cover](#)
 - [Five Frame Numeral Match](#)
 - [0 - 10 Numeral, Word, and Picture Card](#)
 - [Who Has More?](#)
 - [Making and Comparing Sets](#)
 - [Towers of Five](#)
 - [Addition Bag](#)

Suggestions for Differentiation, Scaffolding and Intervention

Differentiation or Intervention

Any teacher moves/strategies that address misconceptions can be used in differentiation or as interventions.

Math Teaching Practice Resources contain resources that provide opportunities for differentiation, intervention, or extension aligned to the strategies below.

- [How to Select Math Intervention Content](#)
- [Coherence Map in Math](#) – The coherence map shows how standards within and across grades build upon each other. You can use the map to assist you in to build student understanding by linking together concepts within and across grades and identify gaps in a student's knowledge by tracing a standard back through its logical prerequisites.
- Evidenced-based strategies for supporting struggling students (U.S. Dept. of Education – [What Works Clearinghouse](#))
- Ensure instructional materials are systematic and explicit. In particular, they should include numerous clear models of easy and difficult problems, with accompanying teacher think alouds.
- Provide students with opportunities to solve problems in a group and communicate problem-solving strategies.
- Teach students about the structures of various problem types, how to categorize problems based on structure, and how to determine appropriate solutions for each problem type.
- Students should work with visual representations of mathematical ideas.
- If visual representations are not sufficient for developing accurate abstract thought and answers, use concrete manipulative first. (Include the next line for middle school and older students only) Although this can also be done with students in upper elementary and middle

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school grades, use of manipulatives with older students should be expeditious because the goal is to move toward understanding of and facility with visual representations and finally to the abstract.

- Provide carefully constructed questions to help direct students in determining what to do to solve problems, but they shouldn't be told how to reach the solution.
- Instruction during the intervention should be explicit and systematic. This includes providing models of proficient problem solving, verbalization of thought processes, guided practice, corrective feedback, and frequent cumulative review.

Intervention for facts

- Provide about 10 minutes per session of instruction to build quick retrieval of basic arithmetic facts. Consider using technology, flashcards, and other materials for extensive practice to facilitate automatic retrieval.
- For students in K-2 explicitly teach strategies for efficient counting to improve the retrieval of mathematics facts.
- Teach students in grade 2-8 how to use their knowledge of properties, such as commutative, associative, and distributive to derive facts in their heads.
- [How to Promote Acquisition of Math Facts – Intervention for struggling students](#)
- [National Center on Intensive Intervention - Basic Facts](#)
- Once a strategy has been taught, it is important to reinforce it. The reinforcement or practice exercises should be varied in type and focus as much on the discussion of how students obtained their answers as on the answers themselves.
- Having students work in groups (as opposed to handing your bright students a workbook to work on when the classroom material isn't challenging enough) with other children ready for advanced material shows them that mathematics is not a solitary discipline -- mathematics is exciting and vibrant and creative and fun.

[Concrete, Representational, Abstract Progression](#)

EL Strategies

- [Colorin Colorado](#) – A Bilingual site for educators and families of English learners
- [Stanford University - Principles for Mathematics Instruction of ELs](#)
- [CT State Dept. Of Education English Learner Standards and Resources](#)
- Nonverbal responses, such as thumbs up, will help you check for understanding without requiring students to produce language. ELLs can participate and show that they understand a concept, or agree or disagree with an idea, without having to talk. This is especially important for students whose comprehension of English is more advanced than their ability to speak the language.
- Pre-teach vocabulary in ways that connect to students' prior knowledge.
- Display posters of graphic representations of vocabulary words.
- <http://www.cal.org/siop/lesson-plans/>
- Provide support to assist in explaining thinking with sentence starters and work banks.
- Use Work Place Sentence Frames or other sentence frames to assist students in math discourse,
- Speak slowly and use clear articulation. Reduce the amount of teacher talk and use a variety of words for the same idea. Exaggerate intonation and place more stress on important new concepts or questions. After asking a question, wait for a few moments before calling on a volunteer. Writing the question on the board will also help.
- English language learners are not always able to answer the questions posed to them, especially

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when the questions are open-ended. Provide support for and improve the participation of students with lower levels of English proficiency by using a prompt that requires a physical response, like "Show me a half, a third, etc.." or "Touch the larger number."

- [Increase academic language knowledge for English learner success.](#)

Extension

- If students can make all the combinations to 5 with object or drawings you can extend the range of combinations to 10. Ask them to organize their combinations and describe any patterns they see. These students may also record the equations for each combination of objects they make.
- Make a group of objects to a number relative to the student's capacity. Have the students count and create a group with the same as the given group. Have the students make a new group with more or less objects. Have the students describe how their new group is different from the given group. Also have them describe how many more or how many fewer their new group has from the given group as part of describing how the groups are different.
- Students can count as many objects as they are capable of and place the objects in groups of 10 and then count by tens
- Students can move to counting on. Have students take turns with a partner turning over a number card and counting on from the number shown. (The numbers for the number cards should be selected to align with the students' capacity.

Interdisciplinary Connections

Children's Literature - * Bridges recommended titles - # Titles embedded in Bridges Units

*The Black Dots by Donald Crews

*Luka's Quilt by Georgia Gubach

*The Keeping Quilt by Patricia Polacco

*The Quilt by Ann Jonas

*1-2-3 Quilt by Better Homes and Garden

*Colorful Quilts by Cynthia LeBlanc Regone

*One Watermelon Seed by Celia Barker Lottridge

*The Quilt Story by Tony Johnston and Tomie DePaola

*Eight Hand Round: A Patchwork Alphabet by Ann Whitford Paul

Social Studies

[The History of Quilting](#) in America - This site by the National Park Service provides adult background knowledge. There are pictures and general information about the various types of quilting designs.

ELA

[SL.K.1](#)

Participate in collaborative conversations with diverse partners about *kindergarten topics and texts* with peers and adults in small and larger groups.