

# Winchester Math Curriculum Grade K

<b>Subject</b>	Mathematics
<b>Grade/Course</b>	Kindergarten
<b>Unit of Study</b>	Unit 1- Numbers to Five & Ten
<b>Pacing</b>	August / September
<b>Unit Summary</b>	Kindergarteners begin by focusing on the counting sequence to 20 and quantities to 10 as well as establishing classroom routines that will provide structure for math class all year long.
<b>Overarching Mathematical Practices</b>	
<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><b>K.MP.6 Attend to precision.</b></p> <p><b>K.MP.7 Look for and make use of structure.</b></p> <p>K.MP.8 Look for and express regularity in repeated reasoning.</p>	
<b>Unit CT Core Content Standards</b>	
<p><b><u>K.CC.A.1-</u> Count to 100 by ones and by tens.</b></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><b><u>K.CC.B.4-</u> Understand the relationship between numbers and quantities; connect counting to cardinality.</b></p> <p><b><u>K.CC.B.4.A</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.</b></p> <p><b><u>K.CC.B.4.B</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.</b></p> <p><b><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 configurations; given a number from 1-20, count out that many objects.</b></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 matching and counting strategies.</p> <p><b><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., <math>5 = 2 + 3</math> and <math>5 = 4 + 1</math>).</b></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.</p>	
<b>“Unwrapped” Standards</b>	
<b>Skills</b>	<b>Content</b>
Count	<ul style="list-style-type: none"> <li>to 100 by ones and tens</li> </ul>

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	<ul style="list-style-type: none"> <li>• numbers of objects</li> <li>• to answer “how many?” up to 20 things</li> </ul>
Write	numbers from 0 to 20
Represent	number of objects with written numeral 0-20
Understand	relationship between numbers and quantities
Say	the number names with one number name for each object when counting objects
Understand	the last number name said tells the number of objects counted regardless of arrangement
Identify	whether one group of objects is greater/less or equal to objects in another group
Decompose	numbers up to 10 into pairs
Record	decomposition
Classify	objects
Sort	categories of objects by count

Essential Questions	Corresponding Big Ideas
1. Why do we count things?  2. Why do we have numerals?	1. Counting helps us be more precise in communicating “how much”, “how many” “how long”etc..  2. Numerals are used to represent quantities.

### Evidence of Learning - Assessment

Pre/Post Assessment	Interim Assessment	Additional Evidence of Learning
<ul style="list-style-type: none"> <li>• Number Corner Baseline Assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Elements of Early Number Sense Checkpoint - M2, S5</li> <li>• Beat You to Five Checkpoint - M3, S5</li> </ul>	Options: <a href="#">Exit tickets</a>  Observational Assessments <ul style="list-style-type: none"> <li>• Pennies &amp; Mats - M1, S3</li> <li>• Spill Five Beans - M2, S4</li> <li>• Beat You to Five - M3, S5</li> <li>• Which Numeral Will Win? - M3, S6</li> <li>• Unifix Cube Patterns - M4, S4</li> </ul> <ul style="list-style-type: none"> <li>• Math Practices Observation Chart</li> </ul>

### Smarter Balanced Interim Assessment

[Smarter Balanced General Scoring Rubrics](#) - 4 Rubrics included - Score Pt 4 to Score Pt 1

#### Smarter Balanced Interim Blocks

Interim assessment blocks may be used for a variety of assessment purposes, including: pre/post, interim and formative (additional evidence of learning).

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- 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.

Interim Assessment Block - access through [CSDE Assessment Portal](#)

- 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

#### Sequence of Instruction:

**Number Corner** → **Problem + Investigations** → **Work Places** → **Home Connections**

Bridges Number Corner: The focus areas for Number Corner aligned to Unit 1 are:

- Establishing procedures for Number Corner including; how to move to discussion areas, showing answers using fingers, following signals, sharing and explaining thinking, and working with partners.

Number Sense

- Counting to 10 by ones
- Read and write numbers 0 to 10
- Count objects one by one in standard order
- Identify the number of objects as the last number said when counting

Computational Fluency

- Add with sums to 10

Geometry

- Model two-dimensional shapes in the world by drawing

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

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

## Instructional Support

**Possible Misconceptions**

**Teacher Moves**

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<ol style="list-style-type: none"> <li>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 (ex. 1,2,3,4,2,3,4).</li> <li>2. Words for the teen numbers may be confusing since they do not follow the pattern of other decade numbers.</li> <li>3. It is common for kindergarten students to invert or reverse numerals.</li>   <li>4. Watch for students who find it confusing to say one number name with one object as they count (one to one correspondence).</li> <li>5. Watch for students who double count an object.</li>   <li>6. Students may see 5 items spread out as different from 5 items close together.</li>   <li>7. 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.</li> <li>8. Students have trouble with the vocabulary of comparison.</li>   <li>9. Although it is appropriate for kindergarteners to use their fingers in initial counting and exploration experiences other experiences are necessary to develop the conceptual understanding for decomposing numbers.</li> </ol>	<ol style="list-style-type: none"> <li>1. Need more experience counting within a smaller range of numbers. Students should be fluent within a range before increasing the range.</li> <li>2. Provide more practice with reciting teen numbers and connecting the number name with the written numeral.</li> <li>3. Give children opportunities to have a variety of kinesthetic experiences to form numerals (write numerals in sand, rice, etc. before they use paper pencil. With additional experience, most children will self-correct.</li> <li>4. Begin with a smaller number of objects and model saying the number name as you physically move the object. Have students do the same.</li> <li>5. Physically moving the object and saying one number name for each object will help to reinforce one-to-one correspondence.</li> <li>6. 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.</li> <li>7. 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 for a given number. This will take time to develop.</li> <li>8. 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.</li> <li>9. Focus on concrete and pictorial representations to develop an understanding that numbers can be put together and taken apart in a variety of ways. Students need many opportunities with different materials 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</li> </ol>
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	with place value and helps students to form mental images and strategies as they start to work with number facts.
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### Vocabulary and Representations

<b>Tier 2 (Academic Vocabulary)</b>	<b>Tier 3 (Domain Specific Vocabulary)</b>
attribute + classify count counting create different extend greater than* greatest less than* most number(s) number words* (one, two, three, four, five, six, seven, eight, nine, ten) objects pattern* same sort	circle decompose five-frame graph numeral(s) ones* repeating pattern ten-frame tens* triangle*  *Smarter Balanced Vocabulary is focused on major mathematical concepts. (Not all possible words have been identified by SBAC)  + Students are not responsible for these vocabulary words at this grade level, however they should have some understanding of the mathematical concept.

### **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.
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. [Teacher/Student Actions](#)
8. [Fletcher Three Act Tasks](#)
9. [Illustrative Math Grade K](#) - Resources and activities for the grade aligned by standard.
10. [Sample Language Frames for Mathematics](#)
11. [Accountable Talk Moves](#)
12. [Number Sense Trajectory](#)
13. [Number Talks Matter - Number Talks at a Glance](#) and Fluency without Fear
14. Teaching Channel - [Beyond Fingers; Place Value and Numbers 11-19](#)
15. [Early Mathematics - A Resource for Teaching Young Children Mathematics](#)
16. [Lessons for Learning](#) - A Collection of Math Tasks/Instructional Ideas
17. [Building Conceptual Understanding and Fluency Through Games](#)

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18. [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.
19. LearnZillion
  - [Marbles in a Jar: Connected Solution Paths](#)
16. K-5 Math Teaching Resources
  - [Writing Numerals 1-10](#)
  - [My Counting Book](#)
  - [Show It Three Ways](#)
  - [Playdough Numbers](#)

## 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.
- [CT Dept. of Education Evidence-based Practice Guides](#) – These guides provide links to "evidence-based activities, strategies and interventions (collectively referred to as 'interventions')."
  - 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 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.

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### 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](#)
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- 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 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

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- Students can count out objects for given numbers. (This is more difficult than counting a set of objects because counting must be fluent enough for the student to have enough attention to remember the number of objects that is being counted out.)
- Children can count as many objects as they are capable of and place the objects in groups of ten and then count by tens.
- Ask students to notice number patterns in other places, such as the classroom, playground, home, etc..
- 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.)
- [Bobby Bear](#) - Illuminations activity where students must put together and count the number of outfits.

### Interdisciplinary Connections

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

* <i>Rooster's Off to See the World</i> by Eric Carle	* <i>Shoes, Shoes, Shoes</i> by Ann Morris
* <i>Five Little Ducks</i> by Raffi	* <i>A Frog in the Bog</i> by Karma Wilson
* <i>The Very Hungry Caterpillar</i> by Eric Carle	* <i>Mouse Count</i> by Ellen Stoll Walsh
# <i>The Bremen-town Musicians</i> by Ruth Belov Gross	# <i>The Little Red Hen</i> by Paul Galdone
* <i>Two Ways to Count to Ten: A Liberian Folktale</i> by Ruby Dee	
<i>I Can Count the Petals on a Flower</i> by John and Stacy Wahl	
<i>Quack and Count</i> by Keith Baker	<i>Ten Black Dots</i> by Donald Crews
<i>Benny's Pennies</i> by Pat Brisson	<i>Ten Flashing Fireflies</i> by Philemon Sturges

#### Art

Encourage students to incorporate patterns in art work, when appropriate.

#### 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.

##### [SL.1.1](#)

Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.

#### Science

Students can count science objects