

Winchester Math Curriculum Grade K

Subject	Mathematics
Grade/Course	Kindergarten
Unit of Study	Unit 7: Weight and Place Value
Pacing	April
Unit Summary	Students explore weight and capacity, solve addition and subtraction story problems, and begin to develop an understanding of place value.

Overarching Mathematical Practices

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

K.MP.2 Reason abstractly and quantitatively.

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

K.MP.4 Model with mathematics.

K.MP.5 Use appropriate tools strategically.

K.MP.6 Attend to precision.

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

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

Unit CT Core Content Standards

K.OA.2- Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

K.OA.3- 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 $5 = 4 + 1$).

K.OA.5- Fluently add and subtract within 5.

K.NBT.1- Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

K.MD.1- Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

K.MD.2- Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

K.MD.3- Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

"Unwrapped" Standards

Skills	Content
Fluently add and subtract	Within 5.
Add and subtract	Within 10.
Solve	Addition and subtraction word problems.
Decompose	<ul style="list-style-type: none"> Numbers less than or equal to 10 in more than one way.

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	<ul style="list-style-type: none"> Numbers from 11 to 19 into ten ones and some further ones using objects or drawings 	
Compose	Numbers from 11 to 19 from ten ones and some further ones using objects or drawings.	
Record	Each composition and decomposition by a drawing or equation.	
Understand	Numbers 11 to 19 are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	
Describe	<ul style="list-style-type: none"> Measurable attributes. Several measurable attributes of a single object. 	
Directly compare	Two objects with a common measurable attribute.	
Describe	The difference when comparing objects with common measurable attributes.	
Classify	Objects	
Count	Number of objects in categories.	
Sort	Categories by count.	
Essential Questions		
Corresponding Big Ideas		
<ol style="list-style-type: none"> What are numbers? Why do you look for and use structure in mathematics? What is place value? 	<ol style="list-style-type: none"> Numbers are the labels for naming and recording the size of a collection and represent quantities. Mathematicians use structure/patterns to make sense of concepts and problems and connect prior knowledge to similar situations and extend to new and/or novel situations. Place value is the meaning of a number based on its position. It is the name of the location of a digit in a number. 	
Evidence of Learning - Assessment		
Pre/Post Assessment	Interim Assessment	Additional Evidence of Learning
N/A	<ul style="list-style-type: none"> Combinations to Five and Equations - Module 1, Session 4 Story Problem Checkpoint - Module 3, Session 4 	Options <ul style="list-style-type: none"> Exit Tickets Observational Assessments <ul style="list-style-type: none"> Spin and Compare - M1, S3 Measuring Handfuls - M1, S5 Capture the Number - M2, S2 Double Top Draw - M2, S4

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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).
- 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

Bridges NUmber Corner: The focus areas for Number Corner (workouts that introduce, reinforce, and extend skills)aligned to Unit 7 are:

- Counting and Cardinality
 - Count to 100 by ones and tens.
 - Count objects one by one.
 - Identify the number of objects as the last number said when counting.
 - For any number 1 to 9, find the number that makes 10 when added to that number.
 - Count forward from a given number.
 - Count backward from any number in the range of 49 to 1.
 - Read numbers 31 to 49.
 - Demonstrate that each successive number names refers to quantity that is one larger than the previous number.
 - Count the number of objects classified in categories.
- Computational Fluency
 - Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group for groups up to 10 objects.
 - Represent addition with objects, drawings, numbers or equations.
 - Add and subtract with sums and minuends to 10.
 - Solve addition and subtraction story problems.
 - Record pairs of numbers whose sum is 10 using equations.
 - Fluently add sums to 5.
- Measurement
 - Describe the length or weight of an object.
 - Describe several measurable attributes of a single object.

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- Compare the length or weight of two objects.
- Classify object into categories
- Math Practice Standards
 - Use appropriate tools strategically.
 - Model with mathematics.

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

Module 1	Module 2	Module 3	Module 4
Problem + Investigation <ul style="list-style-type: none"> ● Sessions 1,2,4 Work Place <ul style="list-style-type: none"> ● Sessions 1-5 Home Connection <ul style="list-style-type: none"> ● Sessions 2 + 5 	Problem + Investigation <ul style="list-style-type: none"> ● Sessions 1,3,5 Work Place <ul style="list-style-type: none"> ● Sessions 1-4 Home Connection <ul style="list-style-type: none"> ● Sessions 2 + 5 	Problem + Investigation <ul style="list-style-type: none"> ● Sessions 1,2,3,5 Work Place <ul style="list-style-type: none"> ● Sessions 2-5 Home Connection <ul style="list-style-type: none"> ● Sessions 2 + 5 	Problem + Investigation <ul style="list-style-type: none"> ● Sessions 1-5 Work Place <ul style="list-style-type: none"> ● Sessions 1-5 Home Connection <ul style="list-style-type: none"> ● Sessions 2 + 5

Possible Misconceptions

1. Students are struggling to represent an addition story problem.
2. Students may over-generalize the vocabulary in word problems and think that certain words indicate solution strategies that must be used to find an answer. They might think that the word “more” always means to add and the words “take away” or “left” always means to subtract.
3. If students progress from working with manipulatives to writing numerical expressions and equations, and they skip using pictorial thinking—students will then be more likely to use finger counting and rote memorization for work with addition and subtraction.
4. Continues to count by ones to solve problems.

Teacher Moves

1. Provide students with cubes to model their thinking about a problem. Then ask them to find the total and share their thinking. Other strategies can include; acting out, drawings, or using a number rack.
2. When students use the words take away to refer to subtraction and its symbol, teachers need to repeat students’ ideas using the words minus or subtract. The term —totalll should be used instead of the term —sumll. —Sumll sounds the same as —somell, but has the opposite meaning. —Somell is used to describe problem situations with one or both addends unknown, so it is better in the earlier grades to use —totalll rather than —sum.
3. Just knowing the basic facts is not enough. We need to help students develop the ability to quickly and accurately understand the relationships between numbers. They need to make sense of numbers as they find and make strategies for joining and separating quantities
4. Provide students with tens-frame counting mats to organize cubes, or have them build combinations on number racks, and

<p>5. Some students might not see zero as a number.</p> <p>6. Counting on or counting from a given number conflicts with the learned strategy of counting from the beginning.</p> <p>7. Students have difficulty with ten as a singular word that means 10 things. For many students, the understanding that a group of 10 things can be replaced by a single object and they both represent 10 is confusing.</p> <p>8. Many students have difficulty understanding that when an object is moved away from the object they are comparing it with, the length does not change.</p>	<p>then work with them to count on from the first number.</p> <p>5. Ask students to write 0 and say zero to represent the number of items left when all items have been taken away. Avoid using the word none to represent this situation. Find instances for which the response would be zero in real world settings to provide experiences with the concept of zero.</p> <p>6. In order to be successful in counting on, students must understand cardinality (the number that ends the counting sequence represents how many objects are in the collection). Students often merge or separate two groups of objects and then recount from the beginning to determine the final number of objects represented. For these students, counting is still a rote skill or the benefits of counting on have not been realized. Games that require students to add on to a previous count to reach a goal number encourage developing this concept. Frequent and brief opportunities utilizing counting on and counting back are recommended. These concepts emerge over time and cannot be forced.</p> <p>7. Help students develop the sense of ten by first using groupable materials then replacing the group with an object or representing 10, such as a rod or 10 Frame. Watch for and address the issue of attaching words to materials and groups without knowing what they represent. If this misconception is not addressed early on it can cause additional issues when working with numbers 11-19 and beyond.</p> <p>8. With multiple opportunities, students learn that they have to line up the items they are comparing and/or measuring</p>
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Vocabulary and Representations

Tier 2 (Academic Vocabulary)	Tier 3 (Domain Specific Vocabulary)
actual add*	digit* equation*

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<p> after backward before between capacity column combinations compare count/count on cup different equal* estimate* forward gallon* greater/greater than* heavy/heavier/heaviest identify length* less/ less than light/lighter/lightest liter* long/longer/longest measure* minus more/most number ones* pattern* plus quart* row ruler scale short/shorter.shortest strategies temperature tens* tools total weight </p>	<p> number words 1-50 number words for the multiples of 10 to 100 numeral story problem subtract* sum* ten-frame zero </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.

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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. [Number Sense Trajectory](#)
8. [Number Talks Matter - Number Talks at a Glance](#) and Fluency without Fear
9. Teaching Channel - [Beyond Fingers; Place Value and Numbers 11-19](#)
10. [Early Mathematics - A Resource for Teaching Young Children Mathematics](#)
11. [Lessons for Learning](#) - A Collection of Math Tasks/Instructional Ideas
12. [Building Conceptual Understanding and Fluency Through Games](#)
13. [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.
14. LearnZillion - Lesson Plans and Activities
15. [Building Conceptual Understanding and Fluency Through Games](#)
16. [Bridges Interactive Math Manipulatives](#)
14. [Illustrative Math – Grade K](#) - Resources and activities for the grade aligned by standard.
15. [Accountable Talk Moves](#)
16. [Sample Language Frames for Mathematics](#)
17. [Teacher/Student Actions](#)
18. [Fletcher Three Act Tasks](#)
19. [Vocabulary Development Frayer Model](#) – Elementary and secondary video and resources.
20. Illuminations -[How Many Under the Shell?](#) - partitioning quantities - supports basic fact fluency
21. Illuminations -[Counting Back and Counting On](#) - builds early basic computation strategy
22. [Understanding "Adding to" as a way to Perform Addition](#)

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](#))

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- 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.

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.
- Struggles with basic facts - need more experience with concrete and pictorial representations, including describing what their models represent to make connection to basic facts. Time and experience with developing strategies that are based on patterns and properties will help support learning the facts. It is important to give students time to learn and understand these concepts before procedural skill practice takes place.
- [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](#)

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- 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

- Provide opportunities for students to find objects and measure if they are heavier than, lighter than, or exactly the same as a pound. How many of a particular object does it take to equal exactly a pound. How many real-life objects such as carrots, onion, celery does it take to make a pound of the objects?
- [Lost Buttons](#) - This activity is for students who are ready to investigate subtraction more directly and using the additive property.
- [Let the Chips Fall!](#) - An activity that extends the development of partitioning numbers.
- [Grab and Add](#) - This activity provides opportunities for students to select random numbers of objects and create addition story problems. This builds and extends math practice 4.
- [The Train Game](#) - This activity provides opportunities for extending and deeper understanding of decomposing numbers.

Interdisciplinary Connections

Children's Literature *Bridges recommended texts - #Bridges - embedded texts

*The Dragon Scales by Sarah Albee

Any version of Stone Soup

*Anno's Counting House by Mitsumasa Anno

Equal Shmequal by Virginia Kroll

Ten, Nine, Eight by Molly Bang

Ten Little Caterpillars by Bill Martin, Jr.

Rooster's Off to See the World by Eric Carle

Twenty is Too Many by Kate Duke

*Who Sank the Boats?, by Pamela Allen

One Hundred is a Family by Pam Munoz Ryan

Balancing Act by Ellen Stoll Walsh

Measuring Penny by Loreen Leedy

Let's Count by Tana Hoban

Ten Black Dots by Donald Crews

Centipede's 100 Shoes by Tony Ross

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.

Science

- Classify collected weather information into given categories; count the number of days of types of weather in each category and sort the categories by count. (See connection to Social Studies below)
- Describe measurable attributes of objects, such as length and weight. Describe several measurable attributes of a single object.

Physical Education

- Count and compare various actions, such as skipping, hopping, how many balls are thrown, etc...

Social Studies

- Discuss the impact of weather on the community using the information collected in science. (See Science connection for more details.)