Winchester Math Curriculum Grade 1

Subject	Mathematics
Grade/Course	Grade One
Unit of Study	Unit 1- Numbers All Around Us
Pacing	August / September
Unit Summary	First graders establish classroom standards around exploring and communicating about numbers. They develop number sense and number combinations with an emphasis on combinations to 10. This unit introduces important mathematical models, including number rack and five- and ten- frames, students are expected to become proficient using strategies that emerge from these models.

Overarching Mathematical Practices

1.MP.1 Make sense of problems and persevere in solving them.
1.MP.2 Reason abstractly and quantitatively.
1.MP.3 Construct viable arguments and critique the reasoning of others.
1.MP.4 Model with mathematics.
1.MP.5 Use appropriate tools strategically
1.MP.6 Attend to precision
1.MP.7 Look for and make use of structure
1.MP.8 Look for and express regularity in repeated reasoning.

Unit CT Core Content Standards

1.OA.B.4- Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.
1.OA.C.5- Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
1.OA.C.6- Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
1.OA.D.8- Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = � – 3, 6 + 6 = �.
1.NBT.A.1- Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
1.NBT.2- Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
1.NBT.B.2b- The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
1.MD.A.2- Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.
1.MD.C.4- Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in

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one category than in another.

1.G.2- Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

Note: Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use technical terms.

Principle of Transitivity of Measurement - If the length of object A is greater than the length of object B, and the length of object B is greater than the length of object C, then the length of object A is greater than the length of object C. This principle applies to measurement of other quantities as well.

"Unwrapped" Standards	
Skills	**Content**
Understand	- subtraction - two digits of a two digit number represent tens and ones - numbers from 11 to 19 are composed of a ten and one(s) - length measurement of an object is the same length units that span it with no gaps or overlaps
Relate	counting to addition and subtraction
Add and subtract	within 20
Use	strategies - counting on, making ten, decomposing a number, relating between addition and subtraction, creating equivalent or known sums, etc.
Demonstrate	fluency within 10
Determine	unknown whole number in addition or subtraction equation
Count	to 120 - starting at any number less than 120
Read and write	numerals
Represent	number of objects with written numeral
Express	length of an object as a whole number of length units
Organize, represent and interpret	data with up to three categories
Ask and answer	questions about the total number of data points
Compose	two dimensional shapes or three dimensional shapes
Create	a composite shape
Essential Questions	**Corresponding Big Ideas**
1. How do models help us understand numbers?	1. Models help visualize numbers, number relationships, patterns and number combinations.
2. How can strategies help us add and	2. Strategies can help us build a better

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subtract?	understanding of the relationships between numbers and operations. Some strategies that can help us add and subtract are counting on, making ten, decomposing a number to make ten, using relationships between addition and subtraction, creating easier, but known sums.
3. How do mathematicians express the length of objects?	3. Measure the length of an object using units of the same size. Length is written as the whole number of units it takes to measure from end to end.

Evidence of Learning - Assessment

Pre/Post Assessment	Interim Assessment	Additional Evidence of Learning
- Unit 1 Group Post-Assessment- Module 4, Session 5 - Number Corner Baseline Assessment - Mid-Sept.	Quick Count Checkpoint- Module 2, Session 5	Options [Exit tickets](#) Observational Assessments - Unifix Cubes - M1, S1 - Pattern Blocks, M1, S1 - Dominoes, M1, S1 - Polydrons - M1, S3 - Geoboards and Bands, M1- S3 - Flip & Write - M2, S4 - Ten and More, M2, S5 - Which Coin Will Win? M3, S3 - Measure with Unifix Cubes, M4, S2 - Math Practices Observation Chart

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 Blocks - access through [CSDE Assessment Portal](#)

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· 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:
Number Sense
- Counting and recognizing numbers from 0 to 30
- Count by 5s to 100
- Count by 2s to 20
- Recognize, describe, and extend number patterns
- Read and write numerals within 120
- Understanding ten number are made of 1 ten and some more
- Unitizing - thinking of 10 items as a single unit of ten

Measurement
- Determine the value of a collection of coins

Computational Fluency
- Use strategies to add with sums to 20
- Demonstrate an understanding that the equal sign indicates equivalence

Data
- Organize, represent, and interpret data
- Ask and answer questions about total number of data points

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

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	● Sessions 2 , 5		● Session 2, 5

Possible Misconceptions	Teacher Moves
1. Students may double count numbers when adding or subtracting 2. Students may have difficulty writing equations using symbols and finding missing addends within any position within an equation. 3. Students may reverse digits (i.e, 12 for 21) 4. Students who leave gaps or overlap units when placing items to measure an object. They may think measurement is a counting task. 5. When posing data collection questions, students may pose one with too many choices. 6. Students may have difficulty visualizing filling in shapes. They may not notice how many of another shape make up the whole shape. (i.e., two triangles make a rectangle)	1. Provide explicit experiences with concrete materials for students to add to or subtract from a given number. 2. Ask students to explain reasoning as they solve problems with materials to connect concrete with the abstract. Give students multiple experiences solving equations in which the missing number is in different positions with the equation. 3. Have students model each number using materials to reinforce the place value digits. Give students experience decomposing numbers into groups of tens and ones using materials and then put the numbers on a place value chart. 4. Model and remind students that the length of an object in the number of units counted. Reiterate that different sizes will result in different amounts of objects counted. 5. Ensure students limit choices to three categories 6. Provide additional experiences for students to use pattern blocks or tangrams to fill in shapes. Remind students to flip, turn and/or rotate to fit the shapes.

Vocabulary and Representations	
Tier 2 (Academic Vocabulary)	Tier 3 (Domain Specific Vocabulary)
add* categories combinations compare compose + counting on decompose + dime equal expression greater than*	addition* data equation* graph measure* part-part-whole model picture graph* subtract/subtraction* skip-count ten-frame two dimensional shapes

information length* less less than* long/longer/longest more more than nickel ones* pattern* penny problem question short/shorter/shortest tally tens*	● rectangle* ● square* ● trapezoid ● triangle* ● half-circles ● quarter-circles three-dimensional shapes ● cube ● right rectangular prism ● right circular cones + ● right circular cylinders + unknown addend + *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. Illustrating the Standards for Mathematical Practice
4. Math Practice Standards Posters Gr. K-1
5. **Implementing the Standards of Mathematics Practice**
6. Modeling with Mathematics
7. Implementing Tasks that Promote Reasoning and Problem Solving
8. Number Sense Trajectory
9. 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.
10. Number Talks Matter - Number Talks at a Glance and Fluency without Fear
11. Counting by 2s Song- Count by 2--first to 50, then to 100
12. Whack a Mole- Game can be set for any start number and any counting-by sequence.
13. TallyMarks Up to 10- View a set of tally marks and type in the number represented, from 1-10.
14. Fairies in the Fog game- Find the missing number in a 5s counting pattern.
15. Gingerbread Men activity- Count and order with gingerbread men.
16. Numerical Order game- Order numbers from 1-10 (Level 1) and 11-20 (Level 2).
17. Saucer Sorter- Count numbers in any sequence (count by 2s, 5s, and more) up to 200. The teacher tool allows you to cover numbers or move numbers around in a given sequence.
18. LearnZillion Grade 1
    ● Skip counting by fives
    ● Pockets: Trajectory of Understanding

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.

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

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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 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
- Extension activities aligned with Bridges lessons are included in each module
- Measure the Room - Students will view a video clip, choose their own non-standard unit of measure, measure the room and then answer thoughtful questions about the activity. Students will create a unit of measure that is equal to ten of the original unit and will make predictions about how the measurement values will change.
- Different Ways to Count - Students will listen to *The King's Commissioners* by Aileen Friedman. They will answer questions about the story and discuss. Then each student will create a drawing to show which counting method is most valuable or efficient for a real-world counting situation. Students will take turns presenting their opinions.
- Collecting, Representing and Interpreting Data

Interdisciplinary Connections

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

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Splash! by Ann Jonas

The Very Hungry Caterpillar by Eric Carle

Let's Count by Tana Hoban

Arctic Fives Arrive by Elinor J. Pinczes

One Is a Snail, Ten is a Crab: A Counting b… by April Pulley Sayre

How Many Feet in the Bed? by Diane Johnston Hamm

More, Fewer, Less by Tana Hoban

What Comes in 2's, 3's & 4's? by Suzanne Aker

*20 Hungry Piggies: A Number Book...*by Trudy Harris

Ten Flashing Fireflies by Philemon Sturges

One Big Pair of Underwear by Laura Gehl

Six Foolish Fishermen by Robert San Souci

Pete the Cat and His Four Groovy Buttons by Eric Litwin

Tally O'Malley (MathStart 2) by Stuart J. Murphy

Eggs and Legs: Counting by Twos (Know Your ...by Michael Dahl

Ten, Nine, Eight by Molly Bang

1, 2, 3 to the Zoo by Eric Carle

On the Stairs by Julie Hofstrand Larios

Ten Little Caterpillars by Bill Martin Jr.

Apple Countdown by Joan Holub

* Press Here by Herve Tullet

Counting Crocodiles by Judy Sierra

Five Creatures by Emily Jenkins

How Big is a Foot? by Rolf Myller

Science

Use tools to measure length of an object as a whole number of length units

Use tools scientifically

Model with mathematics

Organize, represent, and interpret data with up to three categories

Use appropriate tools strategically

ELA

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.

CCSS.ELA-LITERACY.SL.1.1.A

Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).

CCSS.ELA-LITERACY.SL.1.1.B

Build on others' talk in conversations by responding to the comments of others through multiple exchanges.

CCSS.ELA-LITERACY.SL.1.1.C

Ask questions to clear up any confusion about the topics and texts under discussion