

Winchester Math Curriculum Grade 1

Subject	Mathematics
Grade/Course	Grade One
Unit of Study	Unit 2- Developing Strategies with Dice & Dominoes
Pacing	October
Unit Summary	First graders establish standards around exploring and communicating about numbers. They develop number sense and number combinations (with emphasis on combinations to 10). This unit introduces important mathematical models, including number rack and five- and ten-frames and students are expected to become proficient using strategies that emerge from these models.
<u>Overarching Mathematical Practices</u>	
<p>1.MP.1 Make sense of problems and persevere in solving them.</p> <p>1.MP.2 Reason abstractly and quantitatively.</p> <p>1.MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>1.MP.4 Model with mathematics.</p> <p>1.MP.5 Use appropriate tools strategically</p> <p>1.MP.6 Attend to precision</p> <p>1.MP.7 Look for and make use of structure</p> <p>1.MP.8 Look for and express regularity in repeated reasoning.</p>	
<u>Unit CT Core Content Standards</u>	
<p><u>1.OA.A.1-</u> Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.</p> <p><u>1.OA.B.3-</u> Apply properties of operations as strategies to add and subtract.</p> <p><u>1.OA.B.4-</u> Understand subtraction as an unknown-addend problem.</p> <p><u>1.OA.C.5-</u> Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).</p> <p><u>1.OA.C.6-</u> 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 $6 + 6 + 1 = 12 + 1 = 13$).</p> <p><u>1.OA.D.7-</u> Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.</p> <p><u>1.OA.D.8-</u> Determine the unknown whole number in an addition or subtraction equation relating three whole numbers.</p> <p><u>1.NBT.A.1-</u> 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.</p> <p><u>1.NBT.B.3-</u> Compare two two-digit numbers based on meaning of the tens and ones digit, recording the results of comparisons with the symbol $>$, $=$, $<$.</p> <p><u>1.NBT.C.4-</u> Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it</p>	

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is necessary to compose ten.

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 one category than in another.

1.G.A.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.

1.G.A.3- Partition circles and rectangles into two and four equal shares, describe the shares using words *halves*, *fourths*, and *quarters* and using the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

“Unwrapped” Standards

Skills	Content
Use	addition and subtraction within 20 to solve word problems with unknowns in all positions
Apply	properties of operations as strategies to add and subtract
Understand	<ul style="list-style-type: none"> ● subtraction as an unknown addend problem ● the meaning of the equal sign ● we add tens and tens, and ones and ones and it may be necessary to compose a ten. ● decomposing into equal shares creates smaller shares
Relate	counting to addition and subtraction
Add and subtract	within 20 using strategies
Fluently add and subtract	within 10
Determine	<ul style="list-style-type: none"> ● if equations involving addition and subtraction are true or false ● unknown whole number in addition or subtraction equations relating three whole numbers
Count	to 120 starting at any number
Read and Write	numerals
Represent	a number of objects with a written numeral
Compare	two two-digit numbers
Record	number comparisons with $<$, $=$, $>$
Add	within 100 using concrete models and explaining reasoning
Organize, represent, and interpret	data
Ask and answer	questions about data points
Compose	<ul style="list-style-type: none"> ● two or three-dimensional shapes to create a composite shape ● new shapes from the composite shape

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Partition	<ul style="list-style-type: none"> circles and rectangles into two and four equal shares
Describe	<ul style="list-style-type: none"> equal shares using words halves, fourths, and quarters (the words and not numbers should be used with students) the whole as two of, or four of the shares
Essential Questions	Corresponding Big Ideas
<ol style="list-style-type: none"> What are addition and subtraction and how are they used? Why do we compare numbers? 	<ol style="list-style-type: none"> Addition and subtraction are used to model real-world situations computing money saved or spent, combining measurements to determine the length of longer objects, interpreting the relationship of data points, etc... The comparison of numbers helps us to understand the similarities and difference between numbers and to communicate effectively about numbers and make sense of our world.

Evidence of Learning - Assessment

Pre/Post Assessment	Interim Assessment	Additional Evidence of Learning
<ul style="list-style-type: none"> Unit 2 Post Assessment - M3, S5 Number Corner Checkup 1 	<ul style="list-style-type: none"> Domino Addition Checkpoint, Part 1 - M2, S5 Domino Addition Checkpoint, Part 2 - M2, S5 Number Corner Checkup 1, Part 1 Number Corner Checkup 1, Part 2 	<p>Options</p> <p>Observational Assessment:</p> <ul style="list-style-type: none"> Domino Top Draw - M1, S2 Domino Add & Compare - M1, S4 Sort the Sum - M2, S3 Double It - M3, S2 Spin & Add - M3, S3 Spin & Subtract - M3, S4 Exit tickets

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](#)

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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 2 are:

Number Sense

- Compose and decompose 10
- Part-whole relationships among numbers to 10
- Write equations to represent objects shown
- Create math related number stories
- Practice instantly seeking quantities on ten-frames
- Learn about “leaps of ten” on the number line
- Sequencing numbers for 11 to 40

Geometry and Data

- Organize, represent, and interpret a pattern block picture graph
- Count shapes collected and record the data on a frequency table
- Compare and order collections, estimate and count total.
- Collect and count pattern blocks and make a composite shape picture

Computational Fluency

- Identify groups of 5 and 10 and how many more to make 10 and write equations.
- Automaticity and application of facts to 10.

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

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

Instructional Support

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Possible Misconceptions	Teacher Moves
<ol style="list-style-type: none"> 1. It is IMPORTANT not to contribute to a potential student misconception by saying that you cannot take the larger number from the smaller number. (It is possible to take a larger number from a smaller number. The result will be a negative number. 2. It can be common for students who are first using counting strategies to count on their fingers to keep track. 3. Watch for student who may double count when adding or subtracting. This may occur with physical objects, pictures, or using the hundreds chart. For example, if a student is adding $6 + 4$, they may begin with 6(6,7,8,9) with a result of 9 rather than counting on from 6. The same happens in subtraction. 4. Students could recognize two-digit numbers but do not understand that the position of the digit determines its value. 5. It is important for students to associate the symbols $<$ and $>$ with their real meaning. 6. In relation to data collection, some students may pose a question that has too many choices such as "What is your favorite color?" 7. Some students may not realize they have not collected data from every student in 	<ol style="list-style-type: none"> 1. Subtraction is not commutative. It is appropriate to say that $8 - 5 \neq 5 - 8$. 2. As students become fluent with counting and other strategies, the use of fingers should eventually be gently discouraged. 3. Not only should this be pointed out to students, but it is essential also to provide more explicit experiences with concrete materials in which students are adding on to the given addend or subtracting from the total. 4. They need additional work with concrete representations. Give each student a number and ask them to represent that number on a place value chart. They work with a partner to determine which number is greater. They use cards for $<$, $=$, $>$ and put the correct sign between their charts. Only when students show understanding with materials and pictorial representations should they begin to connect those representations to using numerals. 5. Rather than use aids such as alligators or Pac-Man, it may help students who confuse the symbols to think that the open end of the symbol is always closest to the greater number and the closed end is always pointed to the lesser number. It is also important to give students opportunities to change the order of the numbers to see how it impacts the symbols and their meaning. 6. To help with this error, ensure students limit the categories to only three choices. 7. Make sure students know the total number of classmates who will be

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the class. 8. Some students may not be able to summarize the data points.	answering the question. 8. Discuss and review summary statements. Sentence starters can also be helpful.
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Vocabulary and Representations

Tier 2 (Academic Vocabulary)	Tier 3 (Domain Specific Vocabulary)
add* cent (¢) column compare differences* dime doubles greater than* nickel pattern* penny problem problem solving quarters (fourths not money) reasonable strategies row total	addend* addition* compose decompose equa*I equation* even number + fact family fourth (of) half (of) minus odd number + plus properties of operation + (addition and subtraction) <ul style="list-style-type: none"> ● associative property + ● commutative property + ● identity property of addition + ● identify property of subtraction + square* subtract* subtraction* sum* triangle* <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>

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](#)

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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. [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.
9. [Number Talks Matter - Number Talks at a Glance](#) and Fluency without Fear
10. [Accountable Talk Moves](#)
11. [Contribution Checklist](#)
12. [Sentence Frames that Can Build Metacognitive Thinking](#)
13. [Sample Language Frames for Mathematics](#)
14. [The Progression of Addition and Subtraction](#)
15. [Addition and Subtraction Problem Types](#)
16. LearnZillion Grade 1
 - [Fluently Add Numbers within 20 by Making a Ten](#)
 - [Pockets: Trajectory of Understanding](#)
 - [Cookie Detective - Finding the Missing Values in Equations](#)
 - [Comparing Two-Digit Numbers Using Place Value](#)
17. K-5 Math Teaching Resources
 - [Turn Around Trains](#) - Commutative Property of Addition
 - [Count On One](#) - Addition
 - [Make Ten](#)
 - [Doubles Path](#)

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](#)
- 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.

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- 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, flash cards, 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

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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.](#)

Extensions

- Students explore the many different combinations of three addends that result in the same sum.
- Create an addition or subtraction number story book.
- Compose composite shapes that reflect a real-world item.
- Students that have achieved the numbers 0-10 can build bigger numbers with ten-frames. Let these students decide the numbers that they would represent on ten-frames.
- Students that can represent and explain the concept of tens/ones with lower numbers can be asked to represent numbers of higher value.

Interdisciplinary Connections

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

**The Great Book of Domino Games* by Jennifer A. Kelley

**A Box of Red Dominoes* by Francis Boricchio

**Arctic Fives Arrive* by Elinor J. Princes

**The Coin Counting Book* by Rozanne Lanczak Williams

The Great Pet Sale by Mick Inkpen

Give Me Half by Stuart J. Murphy

Subtraction Action by Loreen Leedy

**26 Letters and 99 Cents* by Tana Hoban

Cats Add Up by Marilyn Burns

Ten Sly Pirannahs by William Wise

Mission Addition by Loreen Leedy

Art

Create pictures depicting adding & subtracting sentences.

Music

Sing addition and/or subtraction songs

Social Studies

Develop word problems related to the community or period of study.

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.

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CCSS.ELA-LITERACY.SL.1.1.C

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