

# Winchester Math Curriculum Grade 1

<b>Subject</b>	Mathematics
<b>Grade/Course</b>	Grade One
<b>Unit of Study</b>	Unit 3- Adding, Subtracting, Counting & Comparing
<b>Pacing</b>	November / December
<b>Unit Summary</b>	First graders work towards mastery of key number facts and fact strategies for single-digit addition and subtraction. They use the number rack to see number combinations, find the sum of two numbers, and compare two numbers to find the difference between them. This units also focuses on developing place value, understanding and solving addition combinations to 20. Students will also develop and understanding of the difference model of subtraction.
<b><u>Overarching Mathematical Practices</u></b>	
<p>1.MP.1 Make sense of problems and persevere in solving them.</p> <p><b>1.MP.2 Reason abstractly and quantitatively.</b></p> <p>1.MP.3 Construct viable arguments and critique the reasoning of others.</p> <p><b>1.MP.4 Model with mathematics.</b></p> <p>1.MP.5 Use appropriate tools strategically</p> <p>1.MP.6 Attend to precision</p> <p><b>1.MP.7 Look for and make use of structure</b></p> <p>1.MP.8 Look for and express regularity in repeated reasoning.</p>	
<b><u>Unit CT Core Content Standards</u></b>	
<p><b><u>1.OA.A.1-</u></b> 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><b><u>1.OA.B.3-</u></b> Apply properties of operations as strategies to add and subtract.</p> <p><b><u>1.OA.C.4-</u></b> Understand subtraction as an unknown-addend problem.</p> <p><b><u>1.OA.C.5-</u></b> Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).</p> <p><b><u>1.OA.C.6-</u></b> Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., <math>8 + 6 = 8 + 2 + 4 = 10 + 4 = 14</math>); decomposing a number leading to a ten (e.g., <math>13 - 4 = 13 - 3 - 1 = 10 - 1 = 9</math>); using the relationship between addition and subtraction (e.g., knowing that <math>8 + 4 = 12</math>, one knows <math>12 - 8 = 4</math>); and creating equivalent but easier or known sums (e.g., adding <math>6 + 7</math> by creating the known equivalent <math>6 + 6 + 1 = 12 + 1 = 13</math>).</p> <p><b><u>1.OA.D.7-</u></b> Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? <math>6 = 6</math>, <math>7 = 8 - 1</math>, <math>5 + 2 = 2 + 5</math>, <math>4 + 1 = 5 + 2</math>.</p> <p><b><u>1.OA.D.8-</u></b> Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. <i>For example, determine the unknown number that makes the equation true in each of the equations <math>8 + ? = 11</math>, <math>5 = \_ - 3</math>, <math>6 + 6 = \_</math>.</i></p> <p><b><u>1.NBT.A.1-</u></b> 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><b><u>1.NBT.B.2-</u></b> Understand that the two digits of a two-digit number represent amounts of tens and ones.</p> <p><b><u>1.NBT.B.2.A</u></b></p>	

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**10 can be thought of as a bundle of ten ones — called a "ten."**

**1.NBT.B.2.B**

**The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones**

**1.NBT.B.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols  $>$ ,  $=$ , and  $<$ .**

**1.NBT.C.4- 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 or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.**

**1.MD.C.4- Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.**

**“Unwrapped” Standards**

<b>Skills</b>	<b>Content</b>
Use	<ul style="list-style-type: none"> <li>• addition and subtraction within 20 to solve word problems</li> <li>• objects, drawings and equations to represent problems</li> <li>• strategies such as counting on, making ten, decomposing a number, the relationship between addition and subtraction, creating equivalent but easier sums</li> <li>• concrete models and strategies</li> </ul>
Apply	properties of operations as strategies to add and subtract
Understand	<ul style="list-style-type: none"> <li>• subtraction as an unknown addend problem</li> <li>• the meaning of the equal sign</li> <li>• the two digits of a two-digit number represent amounts of tens and ones</li> <li>• in adding two-digit numbers, one adds tens and tens, and ones and ones; and sometimes it is necessary to compose a ten</li> </ul>
Relate	<ul style="list-style-type: none"> <li>• counting to addition and subtraction</li> <li>• addition or subtraction strategies to written method</li> </ul>
Add and subtract	within 20, fluently within 10
Determine	<ul style="list-style-type: none"> <li>• if addition and subtraction equations are true or false</li> <li>• the unknown number in addition and subtraction equations</li> </ul>
Count	to 120 starting at any number less than 120
Read and write	Numerals in the range 0-120

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Represent	a number of objects with a written numeral	
Compare	two-two-digit numbers based on meanings of tens and ones	
Record	comparisons with symbols $>$ , $=$ , and $<$	
Add	<ul style="list-style-type: none"> <li>• within 100</li> <li>• a two-digit and one-digit number</li> <li>• a two-digit number and multiple of ten</li> </ul>	
Explain	the reasoning used for adding and subtracting two-digit numbers	
Subtract	multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90	
Essential Questions		Corresponding Big Ideas
<ol style="list-style-type: none"> <li>1. How can strategies help us add and subtract?</li> <li>2. How can the structure of addition and subtraction word problems help us to solve them?</li> <li>3. Why do we need to learn addition and subtraction math facts?</li> </ol>		<ol style="list-style-type: none"> <li>1. Strategies can help us build a better understanding of the relationships between numbers and operations. Some strategies that can help us add and subtract are counting on, counting back, making ten, decomposing a number, using relationships between addition and subtraction, and creating easier but known sums.</li> <li>2. Addition and subtraction word problems have basic problem-solving structures: adding to, taking from, putting together, taking apart and comparing that help determine the properties of operations needed to solve the problem.</li> <li>3. Math facts are the foundation for expanding number sense, building a better understanding of the relationship between numbers and operations, and they support the development of numerous other math concepts.</li> </ol>
Evidence of Learning - Assessment		
Pre/Post Assessment	Interim Assessment	Additional Evidence of Learning
Unit 3 Assessment - Module 3, Session 5	Combinations of Ten Checkpoint - M2, S4	Options <a href="#">Exit tickets</a>  Observational Assessments <ul style="list-style-type: none"> <li>• Drop the Beans - M1, S1</li> <li>• Make the Sum - M1, S2</li> </ul>

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- Double Plus or Minus One - M1, S4
- Tower Race - M2, S1
- Cats and Mice - M2, S5
- Fifty or Bust - M3, S4

### 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](#)

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 3 are:

- Introduction to the language of fractions
  - use words wholes, halves, and fourths (do not use the number representation)
  - fractions as equal parts
  - fractional parts make a whole
- Telling time
  - to the hour on digital and analog clocks
  - Introduction to AM and PM
  - write time to the hour
- Working with 10s, 5s, and 1s
  - generate equations for the given number of the day
- Double and Half facts
  - double facts to 10 and related subtraction half facts
  - tell story problems for the facts

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- write equations
- make connections between addition and subtraction
- Reinforcement
  - numeral identification
  - place value
  - number sequence 31-60

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

**Possible Misconceptions**

1. The vocabulary of comparison situations can cause confusion for students. While the words “more than” implies addition and “fewer than” implies subtraction, in comparison situations that is not always the case. Look at this example: Patty had 16 tickets for the raffle. She has 8 fewer than Marcos. How many tickets does Marcos have?
2. Although subtraction is not commutative, it is important not to contribute to a potential student misconception by stating that you cannot take a larger number from a smaller number.
3. Watch for students who are double counting a number when adding or subtracting.
4. Although students may be able to model problem situations with materials and pictures, the transition to writing equations and using symbols may be

**Teacher Moves**

1. Although the problem includes the word fewer, a student would actually add  $16 + 8$  to find the solution. Modeling with concrete objects to use the information by showing Patty’s tickets and 8 more will help students realize that this is actually an addition problem.
2. It is possible to take a larger number from a smaller number. The result will be a negative number. Integers are not introduced until middle school, however we do not want to create this misconception early on. It is appropriate to say  $8 - 5 \neq 5 - 8$
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. Asking students to explain their reasoning as they solve the problem with materials will help them to connect what they have done with the materials to the symbolic

<p>difficult for them, particularly when their reasoning requires finding a missing addend.</p> <ol style="list-style-type: none"> <li>It is not expected that students develop an understanding of place value with the standard 1.NBT.A.1. However, watch for students who reverse digits in writing the numeral and do not demonstrate an understanding that 21 does not have the same value as 12.</li> <li>Continue to watch for students who reverse digits in two-digit numbers.</li> <li>Some students may have difficulty differentiating numbers words that sound alike, for example fifty and fifteen.</li> <li>Students who do not know basic facts may be inaccurate computing with two-digit numbers.</li> <li>Composing tens from ones when adding two-digit numbers is included in this grade.</li> </ol>	<p>equation. Be sure that students have multiple experiences solving equations in which the unknown is in different positions. <math>3 + 8 = \square</math>, <math>3 + \square = 11</math>, <math>\square + 3 = 11</math>, <math>11 - 3 = \square</math>, <math>11 - \square = 8</math>, <math>\square - 3 = 8</math>.</p> <ol style="list-style-type: none"> <li>When reversals occur, have students model each number, using straws or linking cubes to reinforce the place value of digits and to help students differentiate between the numbers.</li> <li>These students need more opportunities to decompose numbers into groups of ten and ones using concrete materials and then put the items in the correct places on a place value chart. They describe the number in terms of tens and ones and then write the number below the concrete representation.</li> <li>These number words can be spelled out and added to a word wall showing pictures, numbers, and words.</li> <li>As those students continue to work on facts, physical models will help in adding accurately. Be sure that all students have ample experience with adding physical models on place value charts, counting on by benchmark numbers (tens and ones), using hundreds charts, and using ten frames as appropriate. Make explicit connections among written physical models, strategies, and written formats.</li> <li>It is appropriate for students to use physical models for these examples and explain their reasoning, explicitly connecting physical models with symbolic notation (written equations).</li> </ol>
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**Vocabulary and Representations**

<b>Tier 2 (Academic Vocabulary)</b>	<b>Tier 3 (Domain Specific Vocabulary)</b>
add* combinations compare difference*	addend + addition* equation* graph

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digit* double equal (equal to)* even greater than* half less than* minus odd ones* plus problem solving reasoning + strategies subtract* tens* total	numeral + subtraction* sum* two-digit number  *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.
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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.
  - a. additional resources will be able to be linked with the purchase of Bridges.
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. [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. [Addition and Subtraction Problem Types](#)
11. [The Progression of Addition and Subtraction](#)
12. [Accountable Talk Moves](#)
13. [Contribution Checklist](#)
14. [Sentence Frames that Can Build Metacognitive Thinking](#)
15. [Sample Language Frames for Mathematics](#)
16. [Fletcher Three Act Tasks](#)
17. [Journal Prompts for Math](#)
18. Bridges [Interactive Math Manipulatives](#)
19. [Beginning to Problem Solve with I Notice, I Wonder](#)
20. K-5 Math Teaching Resources for Grade 1
  - [Count on One](#)
  - [Find Ten](#)
  - [Make Ten](#)
  - [Doubles Path](#)

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- [Four in a Row Subtraction](#)
- [True or False](#)
- [Find the Missing Number](#)
- [Addition Split \(2-digit + multiple of \)](#)

21. Learn Zillion Grade 1

- [Pockets: Trajectory of Understanding](#)
- [Cookie Detective: Find the Missing Values in Equations](#)
- [Ten Ones Equal Ten](#)
- [Applying Place Value to Compare Two-Digit Numbers](#)
- [Practice Comparing Two-Digit 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](#)

[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. (See link to addition and subtraction problem types in Math Teaching Practice Resources)
- 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.
- 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.

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- For students in K -2 explicitly teach strategies for efficient counting to improve the retrieval of mathematics facts.
- [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.
- Sometimes have 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/> Most of the SIOP strategies are good to use with any learner.
- 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.](#)

**Interdisciplinary Connections**

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

\*Equal Shmequal by Virginia L. Kroll

\*Eating Fractions by Bruce McMillan

\*Whole - Y Cow; Fractions are Fun by Taryn Souders

\*Bats Around the Clock by Kathi Appelt

\*Time to... by Bruce McMillan

\*Cluck O' Clock by Kes Gray

\*A Clock Struck One: A Time Telling Tale by Trudy Harris

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\*Chimp Math by Ann Whitehead Nagda and Cindy Bickel  
\*Full House: An Invitation to Fractions by Dayle Ann Dodds  
\*Telling Time: How to Tell Time on Digital and Analog Clocks by Jules Older