

# Winchester Math Curriculum Grade 1

<b>Subject</b>	Mathematics
<b>Grade/Course</b>	Grade One
<b>Unit of Study</b>	Unit 4- Leapfrogs on the Number Line
<b>Pacing</b>	January
<b>Unit Summary</b>	This unit revolves around the number line, an essential mathematical model. Throughout, closed and open number lines are used both as models of our number system, as well as models for beginning operations with addition and subtraction. First graders locate numbers on a number line, use their reasoning skills and number sense to determine unknown values that correspond to empty boxes, and explore addition and subtraction. They become comfortable skip-jumping along open number lines in multiples of 5 and 10, forward and backward, from numbers that are both on and off the decade.
<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>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><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>1.OA.A.1-</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>1.OA.C.5-</b> Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).</p> <p><b>1.OA.C.6-</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>1.OA.D.8-</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>1.NBT.A.1-</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>1.NBT.A.2-</b> Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:</p> <p><b>1.NBT.A.2c-</b> The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).</p> <p><b>1.NBT.B.3-</b> Compare two two-digit numbers based on meanings of the tens and ones digits, recording</p>	

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.NBT.C.5-** Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

**1.NBT.C.6-** 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.

**1.MD.1-** Order three objects by length; compare the lengths of two objects indirectly by using a third object.

**1.MD.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.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.

### “Unwrapped” Standards

Skills	Content
Use	<ul style="list-style-type: none"> <li>● addition and subtraction within 20 to solve word problems</li> <li>● objects, drawings, and equations with a symbol for unknown</li> <li>● strategies such as counting on, making ten, decomposing a number, the relationship between addition and subtraction, creating equivalent but easier or known sums.</li> <li>● use concrete models, drawings, or strategies based on place value, properties of operations, and relationship between addition and subtraction</li> </ul>
Relate	<ul style="list-style-type: none"> <li>● counting to addition and subtraction</li> <li>● strategies to written method and explain reasoning used</li> </ul>
Add and subtract	with 20 demonstrating fluency within 10
Determine	the unknown whole number in an addition and subtraction equation relating three whole numbers
Count	to 120 starting at any number less than 120
Represent	<ul style="list-style-type: none"> <li>● a number of objects with a written numeral</li> <li>● amounts of tens and ones for two-digit</li> </ul>

	numbers
Compare	<ul style="list-style-type: none"> <li>two-digit numbers based on the meanings of tens and ones</li> <li>the length of two objects indirectly</li> </ul>
Record	results of number comparisons using symbols $>$ , $=$ , $<$ .
Add	within 100
Order	three objects by length
Express	the length of an object as a whole number of length units
Understand	the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.
Organize, represent, interpret	data with up to three categories
Ask and answer	questions about the total number of data points

Essential Questions	Corresponding Big Ideas
<ol style="list-style-type: none"> <li>How does the place value work?</li> <li>How do we use a number line?</li> <li>How and why do we look for and make use of structure?</li> </ol>	<ol style="list-style-type: none"> <li>The position of a digit in a number determines its value or place value. (In the base ten system each place represents ten times the value of the place to its right.) Think of this as making groups of ten of the smaller unit and combining them to make a new unit.</li> <li>A number line is used to visualize number sequences and show strategies for counting, comparing, adding and subtracting in order to find answers to questions.</li> <li>We look for patterns to develop a sense of the structure of our number system in order to use that structure to become efficient problem solvers.</li> </ol>

**Evidence of Learning - Assessment**

Pre/Post Assessment	Interim Assessment	Additional Evidence of Learning
<ul style="list-style-type: none"> <li>Unit 4 Post- Assessment Module 3, Session 5</li> <li>Number Corner Checkup 2</li> </ul>	Number Line Checkpoint - M2, S5	Options <a href="#">Exit tickets</a>  Observations <ul style="list-style-type: none"> <li>Frog Jump Game - M1, S4</li> <li>Super Frogs - M2, S4</li> <li>Frog Path - M3, S1</li> <li>Hit the Pad -M3, S5</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).
- 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.
- 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.

#### · **Unit-aligned Smarter Balanced Interim Assessment Block (IAB)\*:**

- IAB
- *\*Some interim blocks show clear, strong alignment to priority standards within the unit. Other blocks have been placed in one specific unit but could be aligned to the priority standards of several units. Blocks have been spread out over the course of all units for a more balanced approach to assessment throughout the school year. These interim blocks, used in partnership with the Style Guide, will support the creation of unit- and standard-aligned items for instructional use.*

## Learning Plan

### Researched-based Instructional Resources and Methods

#### Sequence of Instruction:

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

Bridges Number Corner: The focus areas for Number Corner aligned to Unit 4 are:

#### Solving Problems

- Equations with missing addends, minuends, and subtrahends
- Story problems with missing addends, minuends, and subtrahends
- Developing efficient and fluent strategies

#### Measurement

- Counting dimes and pennies
- Compare and order collections of coins
- Estimate amount of money in coin collections
- Find total amount of money

#### Number Sense

- Composing and decomposing 100
- Writing equation for composing and decomposing
- Skip counting by 5s
- Number sequencing in the seventies and eighties

**Computational Fluency**

- Double facts
- Doubles plus or minus 1 facts

**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 1, 2, 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, 2, 3, 5</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 1-4</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>● Session 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. Although students may be able to model problem situations with materials and pictures, the transition to writing equations using symbols may be more difficult for them, particularly when their reasoning requires finding a missing addend.
2. It is not expected that students develop an understanding of place value in working with numbers to 120. However watch for students who reverse digits when writing numerals or do not demonstrate an understanding, for example, that 21 does not have the same value as 12
3. Continue to watch for students who reverse digits.
4. Some students may have difficulty differentiating number words that sound alike, for example, fifty and fifteen.
5. Students who recognize two-digit numbers but do not understand that the position of

**Teacher Moves**

1. 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 equation. Be sure that students have multiple experiences solving equations in which the unknown is in different positions.
2. 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 numbers.
3. These students need more opportunities to decompose numbers into groups of tens and ones using concrete materials and then put the items in the correct places on a place value chart. They describe the number of tens and ones and then write the numeral below the concrete representation.
4. These number words can be spelled out and added to a word wall showing pictures, numbers, and words.
5. They need additional work with concrete representations. Give each student a

<p>the digit determines its value.</p> <ol style="list-style-type: none"> <li>6. It is important for students to associate the symbols <math>&lt;</math> and <math>&gt;</math> with their real meaning.</li> <li>7. Student who do not know basic facts may be inaccurate in computing with two-digit numbers.</li> <li>8. Students begin to develop an understanding of regrouping (composing tens and ones) when adding two-digit numbers.</li> <li>9. Since understanding the concept of 10 more or 10 less leads to understanding of additional place value concepts, students who depend on counting or using fingers have not meet the standard of mentally finding 10 more or 10 less.</li> <li>10. Some students may subtract the digits in the tens place but ignore the digits in the ones place.</li> </ol>	<p>number and ask them to represent that number on their place value chart. They work with a partner to determine which number is greater. They use cards with <math>&lt;</math>, <math>&gt;</math>, <math>=</math> 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.</p> <ol style="list-style-type: none"> <li>6. 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 important to give student opportunities to change the order of the numbers to see how it impacts the symbols and their meaning.</li> <li>7. 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 a hundreds chart, and using ten frames as appropriate. Make explicit connections among written physical models, strategies, and written formats.</li> <li>8. It is appropriate for students to use physical models for these examples and explain their reasoning, explicitly connecting physical models with symbolic notation (equations).</li> <li>9. Students who cannot determine 10 more or 10 less than a number from 1 to 100 need more experience with concrete materials, such as linking cubes or bundles of straws. Finding patterns on the hundreds chart is also helpful, but the language can be confusing for some students (go up a row to find 10 less and down a row to find 10 more)</li> <li>10. Ask them to describe what they are subtracting in terms of place value. For example, in subtracting <math>70 - 40</math>, students</li> </ol>
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	<p>should say they are taking 4 tens from 7 tens or 7 tens minus 4 tens. Have them put concrete models on the place value chart and then subtract or physically remove the 4 tens from the 7 tens. They describe the difference as 3 tens. Ask them how to write 3 tens (30) and how many ones are in that number. They should explain why there are 0 ones and why it is necessary to put the digit 0 in the ones place.</p>
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**Vocabulary and Representations**

<b>Tier 2 (Academic Vocabulary)</b>	<b>Tier 3 (Domain Specific Vocabulary)</b>
<p>add* compare difference* double equal* information less than* long/longer/longest more than multiple* plus predict/prediction problem scale short/shorter/shortest skip-jump strategies taller than total</p>	<p>addition* data* equation* graph* half height inch (in)* measure* minus number line* ones* open number line subtract* subtraction* sum* tens*</p> <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](#)
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. [Sentence Frames that Can Build Metacognitive Thinking](#)
11. [Sample Language Frames for Mathematics](#)
12. [The Progression of Addition and Subtraction](#)
13. [Addition and Subtraction Problem Types](#)
14. [Journal Prompts for Math](#)
15. [Illustrative Math – Grade 1](#) - Resources and activities for the grade aligned by standard.
16. [Teacher/Student Actions](#)
17. [Fletcher Three Act Tasks](#)
18. Bridges [Interactive Math Manipulatives](#)
19. [Number Sense Trajectory](#)
20. [Accountable Talk Moves](#)
21. LearnZillion Grade 1
  - [Ten Ones Equal One Ten](#)
  - [Making Groups of Ten](#)
  - [Carnival Candy Challenge](#)
22. K-5 Math Teaching Resources
  - [Find the Missing Number](#)
  - [Base Ten Path](#)
  - [Comparing Two-Digit Numbers](#)
  - [Ten More](#)

### **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 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](#)

- 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.](#)

#### Extensions

- [Different Ways to Count](#)
- [Cover the Board](#) - 10 more 10 less
- [Add it Up - Close to 100](#)
- Extension activities aligned with Bridges lessons are included in each module

### Interdisciplinary Connections

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

\**Penguins* by Seymour Simon

\**Penguins* by Diane Swanson

\**Antarctica* by Trace Taylor

\**Antarctica* by Helen Cowcher

\**Tacky the Penguin* by Helen Lester

#### 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.

##### [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

Science

- Use counting and numbers to identify and describe patterns in the natural and designed world(s)
- Describe, measure, and/or compare quantitative attributes of different objects and display the data using simple graphs.
- More in-depth study of Penguins