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Unit 6--3-Digit Addition and Subtraction</td><td colspan="2">Subject: Math
Time Frame: 25 days
Domains: Operations in Algebraic Thinking, Number and Operations in Base Ten, Measurement and Data</td></tr>
<tr><td>Standards</td><td>Content Standards:
2.OA.1, 2.NBT.1, 2.NBT.1a, 2.NBT.1b, 2.NBT.2, 2.NBT.3, 2.NBT.4, 2.NBT.5, 2.NBT.7, 2.NBT.8, 2.NBT.9, 2.MD.8
http://www.corestandards.org/wp-content/uploads/Math_Standards.pdf</td><td>Practice Standards:
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<tr><td>Enduring Understandings</td><td colspan="2">1. Extend base-ten understanding to 1000.
2. Compute sums and differences within 1000 using place value.
3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
4. Solve one and two step problems.
5. Add and subtract within 1000.</td></tr>
<tr><td>Essential Questions</td><td colspan="2">1. How can I count and compare numbers to 1000?
2. How can I add and subtract through 1000?</td></tr>
<tr><td>Vocabulary</td><td colspan="2">one thousand, decade number, hundreds, tens, ones, Show All Totals, New Groups Below, New Groups Above, ungroup, opposite operations</td></tr>
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Priority and Supporting CCSS	Explanations and Examples*
2.OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	**2.OA.1.** Word problems that are connected to students' lives can be used to develop fluency with addition and subtraction. Table 1 (Appendix A) describes the four different addition and subtraction situations and their relationship to the position of the unknown. Examples: • Take-from example: David had 63 stickers. He gave 37 to Susan. How many stickers does David have now? 63 – 37 = __ • Add to example: David had $37. His grandpa gave him some money for his birthday. Now he has $63. How much money did David's grandpa give him? $37 +__ = $63 • Compare example: David has 63 stickers. Susan has 37 stickers. How many more stickers does David have than Susan? 63 – 37 =__ Even though the modeling of the two problems above is different, the equation, 63 - 37 = __ , can represent both situations (How many more do I need to make 63?) • Take-from (Start Unknown) David had some stickers. He gave 37 to Susan. Now he has 26 stickers. How many stickers did David have before? __ - 37 = 26 It is important to attend to the difficulty level of the problem situations in relation to the position of the unknown. • Result Unknown problems are the least complex for students followed by Total Unknown and Difference Unknown • The next level of difficulty includes Change Unknown, Addend Unknown, followed by Bigger Unknown • The most difficult are Start Unknown, Both Addends Unknown, and Smaller Unknown Second grade students should work on ALL problem types regardless of the level of difficulty. Students can use interactive whiteboard or document camera

*Source – Connecticut Core Standards for Mathematics as adapted from the Arizona Academic Content Standards

	to demonstrate and justify their thinking. Continued on next page This standard focuses on developing an algebraic representation of a word problem through addition and subtraction --the intent is not to introduce traditional algorithms or rules.

Priority and Supporting CCSS	Explanations and Examples*
2.NBT.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: **a. 100 can be thought of as a bundle of ten tens — called a "hundred."** **b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).**	**2.NBT.1.** Understanding that 10 ones make one ten and that 10 tens make one hundred is fundamental to students' mathematical development. Students need multiple opportunities counting and "bundling" groups of tens in first grade. In second grade, students build on their understanding by making bundles of 100s with or without leftovers using base ten blocks, cubes in towers of 10, ten frames, etc. This emphasis on bundling hundreds will support students' discovery of place value patterns. As students are representing the various amounts, it is important that emphasis is placed on the language associated with the quantity. For example, 243 can be expressed in multiple ways such as 2 groups of hundred, 4 groups of ten and 3 ones, as well as 24 tens with 3 ones. When students read numbers, they should read in standard form as well as using place value concepts. For example, 243 should be read as "two hundred forty-three" as well as two hundreds, 4 tens, 3 ones. A document camera or interactive whiteboard can also be used to demonstrate "bundling" of objects. This gives students the opportunity to communicate their counting and thinking.

2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s.	**2.NBT.2** Students need many opportunities counting, up to 1000, from different starting points. They should also have many experiences skip counting by 5s, 10s, and 100s to develop the concept of place value. Examples: • The use of the 100s chart may be helpful for students to identify the counting patterns. • The use of money (nickels, dimes, dollars) or base ten blocks may be helpful visual cues. • The use of an interactive whiteboard may also be used to develop counting skills. The ultimate goal for second graders is to be able to count in multiple ways with no visual support.
2.NBT. 3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	**2.NBT. 3.** Students need many opportunities reading and writing numerals in multiple ways. Examples: • Base-ten numerals 637 (standard form) • Number names six hundred thirty seven (written form) • Expanded form 600 + 30 + 7 (expanded notation) When students say the expanded form, it may sound like this: "6 hundreds plus 3 tens plus 7 ones" OR 600 plus 30 plus 7."
2.NBT.4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	**2.NBT.4.** Students may use models, number lines, base ten blocks, interactive whiteboards, document cameras, written words, and/or spoken words that represent two three-digit numbers. To compare, students apply their understanding of place value. They first attend to the numeral in the hundreds place, then the numeral in tens place, then, if necessary, to the numeral in the ones place. Comparative language includes but is not limited to: more than, less than, greater than, most, greatest, least, same as, equal to and not equal to. Students use the appropriate symbols to record the comparisons.

Priority and Supporting CCSS	Explanations and Examples*
2.NBT.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	**2.NBT.5.** Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Students should have experiences solving problems written both horizontally and vertically. They need to communicate their thinking and be able to justify their strategies both verbally and with paper and pencil. Addition strategies based on place value for 48 + 37 may include: • Adding by place value: 40 + 30 = 70 and 8 + 7 = 15 and 70 + 15 = 85. • Incremental adding (breaking one number into tens and ones); 48 + 10 = 58, 58 + 10 = 68, 68 + 10 = 78, 78 + 7 = 85 • Compensation (making a friendly number): 48 + 2 = 50, 37 – 2 = 35, 50 + 35 = 85 Subtraction strategies based on place value for 81 - 37 may include: • Adding Up (from smaller number to larger number): 37 + 3 = 40, 40 + 40 = 80, 80 + 1 = 81, and 3 + 40 + 1 = 44. • Incremental subtracting: 81 -10 = 71, 71 – 10 = 61, 61 – 10 = 51, 51 – 7 = 44 • Subtracting by place value: 81 – 30 = 51, 51 – 7 = 44 Properties that students should know and use are: • Commutative Property of Addition (Example: 3 + 5 = 5 + 3) • Associative Property of Addition (Example: (2 + 7) + 3 = 2 + (7+3)) • Identity Property of 0 (Example: 8 + 0 = 8) Students in second grade need to communicate their understanding of why some properties work for some operations and not for others. • Commutative Property: In first grade, students investigated whether the Commutative Property works with subtraction. The intent was for students to recognize that taking 5 from 8 is not the same as taking 8 from 5. Students should also understand that they will be working with numbers in later grades that will allow them to subtract larger numbers from smaller numbers. This

	exploration of the commutative property continues in second grade. Associative Property: Recognizing that the Associative Property does not work for subtraction is difficult for students to consider at this grade level as it is challenging to determine all the possibilities.
2.NTB.7. Add and subtract within 1000, 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. Understand that in adding or subtracting three digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds	**2.NTB.7.** There is a strong connection between this standard and place value understanding with addition and subtraction of smaller numbers. Students may use concrete models or drawings to support their addition or subtraction of larger numbers. Strategies are similar to those stated in 2.NBT.5, as students extend their learning to include greater place values moving from tens to hundreds to thousands. Interactive whiteboards and document cameras may also be used to model and justify student thinking.

2.NBT.8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	**2.NBT.8**. Students need many opportunities to practice mental math by adding and subtracting multiples of 10 and 100 up to 900 using different starting points. They can practice this by counting and thinking aloud, finding missing numbers in a sequence, and finding missing numbers on a number line or hundreds chart. Explorations should include looking for relevant patterns. Mental math strategies may include: • counting on; 300, 400, 500, etc. • counting back; 550, 450, 350, etc. Examples: • 100 more than 653 is _____ (753) • 10 less than 87 is _____ (77) • "Start at 248. Count up by 10s until I tell you to stop." An interactive whiteboard or document camera may be used to help students develop these mental math skills.
2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.	**2.NBT.9.** Students need multiple opportunities explaining their addition and subtraction thinking. Operations embedded within a meaningful context promote development of reasoning and justification. Example: Mason read 473 pages in June. He read 227 pages in July. How many pages did Mason read altogether? • Karla's explanation: 473 + 227 = _____. I added the ones together (3 + 7) and got 10. Then I added the tens together (70 + 20) and got 90. I knew that 400 + 200 was 600. So I added 10 + 90 for 100 and added 100 + 600 and found out that Mason had read 700 pages altogether. • Debbie's explanation: 473 + 227 = _____. I started by adding 200 to 473 and got 673. Then I added 20 to 673 and I got 693 and finally I added 7 to 693 and I knew that Mason had read 700 pages altogether. • Becky's explanation: I used base ten blocks on a base ten mat to help me solve this problem. I added 3 ones (units) plus 7 ones and got 10

	ones which made one ten. I moved the 1 ten to the tens place. I then added 7 tens rods plus 2 tens rods plus 1 tens rod and got 10 tens or 100. I moved the 1 hundred to the hundreds place. Then I added 4 hundreds plus 2 hundreds plus 1 hundred and got 7 hundreds or 700. So Mason read 700 books. Students should be able to connect different representations and explain the connections. Representations can include numbers, words (including mathematical language), pictures, number lines, and/or physical objects. Students should be able to use any/all of these representations as needed. An interactive whiteboard or document camera can be used to help students develop and explain their thinking.
2.MD.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. ***Example: If you have 2 dimes and 3 pennies, how many cents do you have?***	**2.MD.8.** Since money is not specifically addressed in kindergarten, first grade, or third grade, students should have multiple opportunities to identify, count, recognize, and use coins and bills in and out of context. They should also experience making equivalent amounts using both coins and bills. "Dollar bills" should include denominations up to one hundred ($1.00, $5.00, $10.00, $20.00, $100.00). Students should solve story problems connecting the different representations. These representations may include objects, pictures, charts, tables, words, and/or numbers. Students should communicate their mathematical thinking and justify their answers. An interactive whiteboard or document camera may be used to help students demonstrate and justify their thinking. Example: • Sandra went to the store and received $ 0.76 in change. What are three different sets of coins she could have received?

Resources
Math Expressions – Unit 6 Lessons 1-15 Soar to Success Math Intervention Mega Math Destination Math Common Core Mathematics-Newmark Learning- Xtramath.org Learnzillion.com Think Central

Unit Assessments
Unit Test Quick Quizzes Formative Assessments Performance Task

Technology: Videos, Websites, Links
https://grade2commoncoremath.wikispaces.hcpss.org/2.OA.1
https://grade2commoncoremath.wikispaces.hcpss.org/2.NBT.1
https://grade2commoncoremath.wikispaces.hcpss.org/2.NBT.2
https://grade2commoncoremath.wikispaces.hcpss.org/2.NBT.3
https://grade2commoncoremath.wikispaces.hcpss.org/2.NBT.4
https://grade2commoncoremath.wikispaces.hcpss.org/2.NBT.5
https://grade2commoncoremath.wikispaces.hcpss.org/2.NBT.7
https://grade2commoncoremath.wikispaces.hcpss.org/2.NBT.8
https://grade2commoncoremath.wikispaces.hcpss.org/2.NBT.9
https://grade2commoncoremath.wikispaces.hcpss.org/2.MD.8

APPENDIX A—TABLE 1

Table 1. Common addition and subtraction situations.[6]

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ? = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ? + 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ? = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ? – 2 = 3

	Total Unknown	Addend Unknown	Both Addends Unknown[1]
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

[1]These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as.
[2]Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.
[3]For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.

Seymour Public Schools Math Grade 2 Unit 6