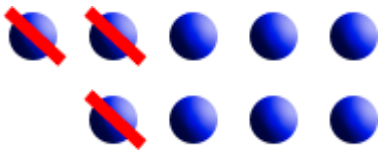
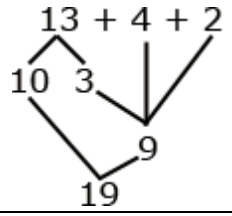
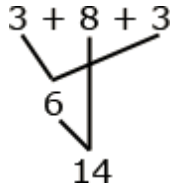
<table>
<tr><td>Grade: 1

Unit 5- Teen Addition and Subtraction</td><td colspan="2">Subject: Math
Time Frame: 22 days
Domain: Operations and Algebraic Thinking
Number and Operations in Base Ten</td></tr>
<tr><td>Standards</td><td>Content Standards:
1.OA.1, 1.OA.2, 1.OA.3, 1.OA.4, 1.OA.5, 1.OA.6, 1.OA.8
1.NBT.1, 1.NBT.2, 1.NBT.2c, 1.NBT.4, 1.NBT.5, 1.NBT.6
http://www.corestandards.org/wp-content/uploads/Math_Standards.pdf</td><td>Practice Standards:
MP 1, 2, 3, 4, 5, 6, 7, 8</td></tr>
<tr><td>Enduring Understandings</td><td colspan="2">1. Represent 2-digit numbers using concrete objects, place value cards, or drawings.
2. Use reasoning to mentally find 10 more or 10 less.
3. Model adding and subtracting multiples of 10 using concrete models or drawings and strategies based on place value, and/or the relationship between addition and subtraction.</td></tr>
<tr><td>Essential Questions</td><td colspan="2">1. How do we solve teen addition and subtraction story problems to find teen totals and unknown partners?
2. How do we solve problems with three addends?
3. How do we know how to add and subtract 10 from 2-digit numbers?</td></tr>
<tr><td>Vocabulary</td><td colspan="2">unknown partner, addend, 10-group, hundred, column, row, grid</td></tr>
</table>

Priority and Supporting CCSS	Explanations and Examples*
1. OA.1. 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.	**1. OA.1.** Contextual problems that are closely connected to students' lives should 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. Students use objects or drawings to represent the different situations. • *Take-from* example: Abel has 9 balls. He gave 3 to Susan. How many balls does Abel have now?  • *Compare* example: Abel has 9 balls. Susan has 3 balls. How many more balls does Abel have than Susan? A student will use 9 objects to represent Abel's 9 balls and 3 objects to represent Susan's 3 balls. Then they will compare the 2 sets of objects. Note that even though the modeling of the two problems above is different, the equation, 9 - 3 = __, can represent both situations yet the compare example can also be represented by 3 + __ = 9 (How many more do I need to make 9?) 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*

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

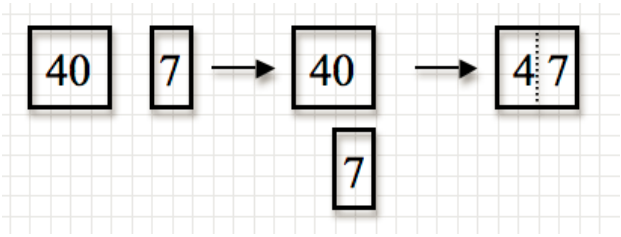
Priority and Supporting CCSS	Explanations and Examples*
	• *Unknown*, followed by *Bigger Unknown* • The most difficult are *Start Unknown, Both Addends Unknown,* and *Smaller Unknown* Students may use document cameras to display their combining or separating strategies. This gives them the opportunity to communicate and justify their thinking.
1. OA.2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	**1. OA.2.** To further students' understanding of the concept of addition, students create word problems with three addends. They can also increase their estimation skills by creating problems in which the sum is less than 5, 10 or 20. They use properties of operations and different strategies to find the sum of three whole numbers such as: •Counting on and counting on again (e.g., to add 3 + 2 + 4 a student writes 3 + 2 + 4 = __ and thinks, "3, 4, 5, that's 2 more, 6, 7, 8, 9 that's more so 3 + 2 + 4 = 9." • Making tens (e.g., 4 + 8 + 6 = 4 + 6 + 8 = 10 + 8 = 18) • Using "plus 10, minus 1" to add 9 (e.g., 3 + 9 + 6 A student thinks, 9 is close to 10 so I am going to add 10 plus 3 plus 6 which gives me 19. Since I added 1 too many, I need to take 1 away so the answer is 18.) • Decomposing numbers between 10 and 20 into 1 ten plus some ones to facilitate adding the ones 

Priority and Supporting CCSS	Explanations and Examples*
	.• Using doubles  Students will use different strategies to add the 6 and 8. • Using near doubles (e.g.,5 + 6 + 3 = 5 + 5 + 1 + 3 = 10 + 4 =14) Students may use document cameras to display their combining strategies. This gives them the opportunity to communicate and justify their thinking.

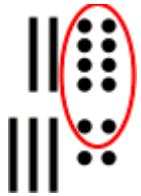
Priority and Supporting CCSS	Explanations and Examples*
1. OA.3. Apply properties of operations as strategies to add and subtract. ***Examples:*** ***If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative Property of Addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 +10 = 12. (Associative Property of Addition.)**** ********Students need not use formal terms for these properties.*	**1. OA.3.** Students should understand the important ideas of the following properties: • Identify Property of Addition (e.g., 6 = 6 + 0) • Identify Property of Subtraction (e.g., 9 – 0 = 9) • Commutative Property of Addition (e.g., 4 + 5 = 5 + 4) • Associative Property of Addition (e.g., 3 + 9 + 1 = 3 + 10 = 13) Students need several experiences investigating whether the Commutative Property works with subtraction. The intent is not for students to experiment with negative numbers but only to recognize that taking 5 from 8 is not the same as taking 8 from 5. Students should recognize that they will be working with numbers later on that will allow them to subtract larger numbers from smaller numbers. However, in first grade we do not work with negative numbers.
1. OA.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. 4.** When determining the answer to a subtraction problem, 12 - 5, students think, "If I have 5, how many more do I need to make 12?" Encouraging students to record this symbolically, 5 + __ = 12, will develop their understanding of the relationship between addition and subtraction. Some strategies they may use are counting objects, creating drawings, counting up, using number lines or 10 frames to determine an answer.

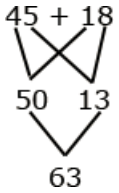
Priority and Supporting CCSS	Explanations and Examples*
1. OA.5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	**1. OA. 5**. Students' multiple experiences with counting may hinder their understanding of counting on and counting back as connected to addition and subtraction. To help them make these connections when students count on 3 from 4, they should write this as 4 + 3 = 7. When students count back 3 from 7, they should connect this to 7 – 3 = 4. Students often have difficulty knowing where to begin their count when counting backward.
1. OA.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. 6.** This standard is strongly connected to all the standards in this domain. It focuses on students being able to fluently add and subtract numbers to 10 and having experiences adding and subtracting within 20. By studying patterns and relationships in addition facts and relating addition and subtraction, students build a foundation for fluency with addition and subtraction facts. 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. The use of objects, diagrams, or interactive whiteboards and various strategies will help students develop fluency

Priority and Supporting CCSS	Explanations and Examples*
1. OA.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. OA. 8**. Students need to understand the meaning of the equal sign and know that the quantity on one side of the equal sign must be the same quantity on the other side of the equal sign. They should be exposed to problems with the unknown in different positions. Having students create word problems for given equations will help them make sense of the equation and develop strategic thinking. Examples of possible student "think-throughs": • *8 + __ = 11*: "8 and some number is the same as 11. 8 and 2 is 10 and 1 more makes 11. So the answer is 3." • *5 = __ – 3*: "This equation means I had some cookies and I ate 3 of them. Now I have 5. How many cookies did I have to start with? Since I have 5 left and I ate 3, I know I started with 8 because I count on from 5. . . 6, 7, 8." Students may use a document camera or interactive whiteboard to display their combining or separating strategies for solving the equations. This gives them the opportunity to communicate and justify their thinking.

1.NBT.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.1.** Students use objects to express their understanding of numbers. They extend their counting beyond 100 to count up to 120 by counting by 1s. Some students may begin to count in groups of 10 (while other students may use groups of 2s or 5s to count). Counting in groups of 10 as well as grouping objects into 10 groups of 10 will develop students understanding of place value concepts. Students extend reading and writing numerals beyond 20 to 120. After counting objects, students write the numeral or use numeral cards to represent the number. Given a numeral, students read the numeral, identify the quantity that each digit represents using numeral cards, and count out the given number of objects.  Students should experience counting from different starting points (e.g., start at 83, count to 120). To extend students' understanding of counting, they should be given opportunities to count backwards by ones and tens. They should also investigate patterns in the base 10 system.

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: **c. 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).**	**1.NBT.2.** Understanding the concept of 10 is fundamental to children's mathematical development. Students need multiple opportunities counting 10 objects and "bundling" them into one group of ten. They count between 10 and 20 objects and make a bundle of 10 with or without some left over (this will help students who find it difficult to write teen numbers). Finally, students count any number of objects up to 99, making bundles of 10s with or without leftovers. As students are representing the various amounts, it is important that an emphasis is placed on the language associated with the quantity. For example, 53 should be expressed in multiple ways such as 53 ones or 5 groups of ten with 3 ones leftover. When students read numbers, they read them in standard form as well as using place value concepts. For example, 53 should be read as "fifty-three" as well as five tens, 3 ones. Reading 10, 20, 30, 40, 50 as "one ten, 2 tens, 3 tens, etc." helps students see the patterns in the number system. Students may use the document camera or interactive whiteboard to demonstrate their "bundling" of objects. This gives them the opportunity to communicate their counting and thinking.
1.NBT.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	**1.NBT.4.** Students extend their number fact and place value strategies to add within 100. They represent a problem situation using any combination of words, numbers, pictures, physical objects, or symbols. It is important for students to understand if they are adding a number that has 10s to a number with tens, they will have more tens than they started with; the same applies to the ones. Also, students should be able to apply their place value skills to decompose numbers. For example, 17 + 12 can be thought of as 1 ten and 7 ones plus 1 ten and 2 ones. Numeral cards may help students decompose the numbers into 10s and 1s.

necessary to compose a ten.	Students should be exposed to problems both in and out of context and presented in horizontal and vertical forms. As students are solving problems, it is important that they use language associated with proper place value (see example). They should always explain and justify their mathematical thinking both verbally and in a written format. Estimating the solution prior to finding the answer focuses students on the meaning of the operation and helps them attend to the actual quantities. This standard focuses on developing addition – the intent is not to introduce traditional algorithms or rules. Examples: • 43 + 36 Student counts the 10s (10, 20, 30…70 or 1, 2, 3…7 tens) and then the 1s. • 28 +34 Student thinks: 2 tens plus 3 tens is 5 tens or 50. S/he counts the ones and notices there is another 10 plus 2 more. 50 and 10 is 60 plus 2 more or 62. 

<table>
<tr>
<td>1. NBT.5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.</td>
<td>
• 45 + 18
Student thinks: Four 10s and one 10 are 5 tens or 50. Then 5 and 8 is 5 + 5 + 3 (or 8 + 2 + 3) or 13. 50 and 13 is 6 tens plus 3 more or 63.


• 29
+ 14
Student thinks: “29 is almost 30. I added one to 29 to get to 30. 30 and 14 is 44. Since I added one to 29, I have to subtract one so the answer is 43.”

1.NBT.5. This standard requires students to understand and apply the concept of 10 which leads to future place value concepts. It is critical for students to do this without counting. Prior use of models such as base ten blocks, number lines, and 100s charts helps facilitate this understanding. It also helps students see the pattern involved when adding or subtracting 10.

Examples:
• 10 more than 43 is 53 because 53 is one more 10 than 43
• 10 less than 43 is 33 because 33 is one 10 less than 43

Students may use interactive versions of models (base ten blocks,100s charts, number lines, etc.) to develop prior understanding.
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1. NBT.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.NBT.6.** This standard is foundational for future work in subtraction with more complex numbers. Students should have multiple experiences representing numbers that are multiples of 10 (e.g. 90) with models or drawings. Then they subtract multiples of 10 (e.g. 20) using these representations or strategies based on place value. These opportunities develop fluency of addition and subtraction facts and reinforce counting up and back by 10s. Examples: • 70 - 30: Seven 10s take away three 10s is four 10s • 80 - 50: 80, 70 (one 10), 60 (two 10s), 50 (three 10s), 40 (four 10s), 30 (five 10s) • 60 - 40: I know that 4 + 2 is 6 so four 10s + two 10s is six 10s so 60 - 40 is 20 Students may use interactive versions of models (base ten blocks,100s charts, number lines, etc.) to demonstrate and justify their thinking.

Resources
Math Expressions - Unit 5, Lessons 1-11 Soar to Success Math Intervention Mega Math Destination Math Common Core Mathematics-Newmark Learning- Units-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Unit Assessments
Unit Test Quick Quizzes Formative Assessments Performance Assessment

Technology: Videos, Websites, Links
www.learnzillion.com www.xtramath.org https://www.georgiastandards.org/Common-Core/Pages/Math-K-5.aspx http://exchange.smarttech.com/index.html#tab=0 http://nlvm.usu.edu/en/nav/vlibrary.html https://grade1commoncoremath.wikispaces.hcpss.org/1.OA.1 https://grade1commoncoremath.wikispaces.hcpss.org/1.OA.3 http://www.internet4classrooms.com/common_core/apply_properties_operations_strategies_add_subtract_operations_algebraic_thinking_first_1st_grade_math_mathematics.htm http://mrnussbaum.com/grade_1_standards/ http://www.youtube.com/watch?v=OWpTqaSr7e8 http://ccssmath.org/?page_id=49 http://www.ohiorc.org/standards/commoncore/mathematics/grade.aspx?id=5022 https://sites.google.com/a/bryantschools.org/math-common-core-resource-site/home-1/1st-grade/1-0a-6 http://www.mrmaffesoli.com/1stGrade/1stGradeCCS.html

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.