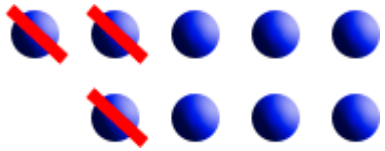
Grade: 1 **Unit 1—Visualize and Represent Numbers from 1-10**	**Subject: Math** • **Time Frame: 17 days** • **Domain: Operations and Algebraic Thinking**	
Standards	Content Standards: 1.OA.1, 1.OA.3, 1.OA.5, 1.OA.6, 1.OA.8 http://www.corestandards.org/wp-content/uploads/Math_Standards.pdf	Practice Standards: MP 1, 2, 3,4, 5, 6, 7, 8
Enduring Understandings	1. Mathematical operations are used in solving problems in which a new value is produced from one or more values. 2. Algebraic thinking involves choosing, combining, and applying effective strategies for answering quantitative questions. 3. We can visualize numbers and represent numbers in different ways. 4. Mathematical properties can be used to add and subtract. 5. Addition and subtraction are related operations.	
Essential Questions	1. In what ways can operations affect numbers? 2. How can different strategies be helpful when solving a problem? 3. How do we visualize and represent numbers from 1-10? 4. How can properties be used to help add and subtract more efficiently? 5. How are addition and subtraction related?	
Vocabulary	More, less, 5-group, plus, plus sign, equal sign, equation, partner, subtract, add, Math Mountain, circle drawing, break-apart, total, difference, count on	

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 can 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 or interactive whiteboards to display their combining or separating 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.)***	**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.

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.

Resources
Math Expressions - Unit 1, Lessons 1-9 Soar to Success Math Intervention Mega Math Destination Math Common Core Mathematics-Newmark Learning- Units-1, 2, 3, 5, 6, 7, 8

Unit Assessments
Unit Test Quick Quizzes Formative Assessments Performance Assessments

Technology: Videos, Websites, Links
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.