Seymour Public Schools Math Grade K Unit 6

Grade: Kindergarten Unit 6-Exploring Addition and Subtraction within 10	Subject: Math • **Time Frame: 4-5 weeks** • **Domains: Counting and Cardinality, Operations and Algebraic Thinking**	
Standards	Content Standards: K.CC.3 K.CC.1 K.OA.1 K.CC.2 K.OA.3 K.CC.4 K.OA.5 K.CC.5 K.OA.2 http://www.corestandards.org/wp-content/uploads/Math_Standards.pdf	Practice Standards: MP 1, 2, 3, 4, 5, 6, 7, 8
Enduring Understandings	1. We can represent addition and subtraction with objects, fingers, drawings, sounds, acting out situations, verbal explanations, expressions or equations. 2. We can solve addition and subtraction word problems by using objects or drawings to represent the problem. 3. We can decompose numbers less than or equal to ten in more than one way (eg. by using objects, drawings or equations). 4. We can add and subtract within 10.	
Essential Questions	1. How can we represent addition and subtraction with objects, fingers, drawings, sounds, acting out situations, verbal explanations, expressions or equations? 2. How can we solve addition and subtraction word problems by using objects or drawings to represent the problem? 3. How can we decompose numbers less than or equal to ten in more than one way (eg. by using objects, drawings or equations)? 4. How can we add and subtract within 10?	

Vocabulary	Add, subtract, word problem, total, act out, decompose, compose, equation, equal, plus, minus, take away, put together, add to, number sentence, join, combine, separate, number pairs
	         See Common Core Georgia Performance Standards Mathematics Glossary
	     https://www.georgiastandards.org/Common-Core/Documents/CCGPS_Mathematics_Glossary.pdf	

Priority and Supporting CCSS	Explanations and Examples*

K.CC.3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	**K.CC.3.** Students should be given multiple opportunities to count objects and recognize that a numeral represents a specific quantity. Once this is established, students begin to read and write numerals (numerals are the symbols for the quantities). The emphasis should first be on quantity and then connecting quantities to the written symbols.
	
	   • A sample unit sequence might include:
	     1. Counting up to 20 objects in many settings and situations over several weeks
	     2. Beginning to recognize, identify, and read the written numerals, and match the numerals to given sets of objects
	     3. Writing the numerals to represent counted objects
	
	Since the teen numbers are not written as they are said, teaching the teen numbers as one group of ten and extra ones is foundational to understanding both the concept and the symbol that represents each teen number. For example, when focusing on the number "14," students should count out fourteen objects using one-to-one correspondence and then use those objects to make one group of ten and four extra ones. Students should connect the representation to the symbol "14."

K.CC.1. Count to 100 by ones and by tens.	**K.CC.1.** The emphasis of this standard is on the counting sequence (rote counting).
	When counting by ones, students need to understand that the next number in the sequence is one more. When counting by tens, the next number in the sequence is "ten more" (or one more group of ten).
	Instruction on the counting sequence should be scaffolded (e.g., 1-10, then 1-20, etc.).
	Counting should be reinforced throughout the day, not in isolation.
	Examples:
	   • Count the number of chairs of the students who are absent.
	   • Count the number of stairs, shoes, etc.

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

	• Counting groups of ten such as "fingers in the classroom" (ten fingers per student) When counting orally, students should recognize the patterns that exist from 1 to 100. They should also recognize the patterns that exist when counting by 10s.
K.CC.2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	**K.CC.2**. The emphasis of this standard is on the counting sequence to 100. Students should be able to count forward from any number, 1-99.
K.CC.4. Understand the relationship between numbers and quantities; connect counting to cardinality. • **When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object** • **Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted** • **Understand that each successive number name refers to a quantity that is one larger**	**K.CC.4**. This standard focuses on one-to-one correspondence and how cardinality connects with quantity. • For example, when counting three bears, the student should use the counting sequence, "1-2-3," to count the bears and recognize that "three" represents the group of bears, not just the third bear. A student may use an interactive whiteboard to count objects, cluster the objects, and state, "This is three" (Cardinality tells "how many") In order to understand that each successive number name refers to a quantity that is one larger, students should have experience counting objects, placing one more object in the group at a time. • For example, using cubes, the student should count the existing group, and then place another cube in the set. Some students may need to re-count from one, but the goal is that they would count on from the existing number of cubes. The student should continue placing one more cube at a time and identify the total number in order to see that the counting sequence results in a quantity that is one larger each time one more cube is placed in the group A student may use a clicker (electronic response system) to communicate his/her count to the teacher.
K.CC.5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.	**K.CC.5**. Students should develop counting strategies to help them organize the counting process to avoid re-counting or skipping objects. Examples: • If items are placed in a circle, the student may mark or identify the starting object • If items are in a scattered configuration, the student may move the objects into an organized pattern

	• Some students may choose to use grouping strategies such as placing objects in twos, fives, or tens (note: this is not a kindergarten expectation) • Counting up to 20 objects should be reinforced when collecting data to create charts and graphs A student may use a clicker (electronic response system) to communicate his/her count to the teacher.
K.OA.1. Represent addition and subtraction with objects, fingers, mental images, drawings*, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. * Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)	**K.OA.1.** Using addition and subtraction in a word problem context allows students to develop their understanding of what it means to add and subtract. Students should use objects, fingers, mental images, drawings, sounds, acting out situations and verbal explanations in order to develop the concepts of addition and subtraction. Then, they should be introduced to writing expressions and equations using appropriate terminology and symbols which include "+," "–," and "=". • Addition terminology: add, join, put together, plus, combine, total • Subtraction terminology: minus, take away, separate, difference, compare Students may use document cameras or interactive whiteboards to represent the concept of addition or subtraction. This gives them the opportunity to communicate their thinking.
K.OA.2, Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	**K.OA.2** Using a word problem context allows students to develop their understanding about what it means to add and subtract. Addition is putting together and adding to. Subtraction is taking apart and taking from. Kindergarteners develop the concept of addition/subtraction by modeling the actions in word problems using objects, fingers, mental images, drawings, sounds, acting out situations, and/or verbal explanations. Students may use different representations based on their experiences, preferences, etc. They may connect their conceptual representations of the situation using symbols, expressions, and/or equations. Students should experience the following addition and subtraction problem types see Table 1 (Appendix A). • <u>Add To word problems</u>, such as, "Mia had 3 apples. Her friend gave her

	2 more. How many does she have now?"
	    o A student's "think aloud" of this problem might be, "I know that Mia has some apples and she's getting some more. So she's going to end up with more apples than she started with."
	• Take From problems such as:
	    o José had 8 markers and he gave 2 away. How many does he have now? When modeled, a student would begin with 8 objects and remove two to get the result.
	• Put Together/Take Apart problems with Total Unknown gives students opportunities to work with addition in another context such as:
	    o There are 2 red apples on the counter and 3 green apples on the counter. How many apples are on the counter?
	• Solving Put Together/Take Apart problems with Both Addends Unknown provides students with experiences with finding all the decompositions of a number and investigating the patterns involved.
	    o There are 10 apples on the counter. Some are red and some are green. How many apples could be green? How many apples could be red?
	
	Students may use a document camera or interactive whiteboard to demonstrate addition or subtraction strategies. This gives them the opportunity to communicate and justify their thinking.

K.OA.3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).	**K.OA.3.** This standard focuses on number pairs which add to a specified total, 1-10. These number pairs may be examined either in or out of context. Students may use objects such as cubes, two-color counters, square tiles, etc. to show different number pairs for a given number. For example, for the number 5, students may split a set of 5 objects into 1 and 4, 2 and 3, etc.

Students may also use drawings to show different number pairs for a given number. For example, students may draw 5 objects, showing how to decompose in several ways.

x x x x x   5 objects

x x|x x x| 5 = 2 + 3

x x x x|x| 5 = 4 + 1

Sample unit sequence:
- A contextual problem (word problem) is presented to the students such as, "Mia goes to Nan's house. Nan tells her she may have 5 pieces of fruit to take home. There are lots of apples and bananas. How many of each can she take?"
- Students find related number pairs using objects (such as cubes or two-color counters), drawings, and/or equations. Students may use different representations based on their experiences, preferences, etc.
- Students may write equations that equal 5 such as:
  o 5=4+1
  o 3+2=5
  o 2+3=4+1

This is a good opportunity for students to systematically list all the possible number pairs for a given number. For example, all the number pairs for 5 could be listed as 0+5, 1+4, 2+3, 3+2, 4+1, and 5+0. Students should describe the pattern that they see in the addends, e.g., each number is one less or one than the previous addend.

| **K.OA.5. Fluently add and subtract within 5.** | **K.OA.5.** This standard focuses on students being able to add and subtract numbers within 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.

Strategies students may use to attain fluency include:
• Counting on (e.g., for 3+2, students will state, "3," and then count on two more, "4, 5," and state the solution is "5")
• Counting back (e.g., for 4-3, students will state, "4," and then count back three, "3, 2, 1" and state the solution is "1")
• Counting up to subtract (e.g., for 5-3, students will say, "3," and then count up until they get to 5, keeping track of how many they counted up, stating that the solution is "2")
• Using doubles (e.g., for 2+3, students may say, "I know that 2+2 is 4, and 1 more is 5")
• Using commutative property (e.g., students may say, "I know that 2+1=3, so 1+2=3")
• Using fact families (e.g., students may say, "I know that 2+3=5, so 5-3=2")

Students may use electronic versions of five frames to develop fluency of these facts. |

Resources
Daily Routine: Math Expressions Teacher Edition Volume 1 or 2: Daily Routines xxxi: Omit Using the Tens and Ones Flip Chart Engage New York Module 4   Unit can be found at http://www.engageny.org/sites/default/files/resource/attachments/math-gk-m4-full-module.pdf   Common Core Georgia Performance Standards- Unit 5: Use tasks at teacher's discretion.   Unit can be found at https://www.georgiastandards.org/Common-Core/Common%20Core%20Frameworks/CCGPS_Math_K_Unit5FrameworkSE.pdf   These resources will be used throughout Seymour Units 5 and 6.   **Literature:** 12 Ways to Get to 11 by Eve Merriam, Ten Flashing Fireflies by Philemon Sturges, One is a Snail, Ten is a Crab by April Pulley Sayre, and Jeff Sayre

Unit Assessments
Links below have resources and formative assessments: Hawaii Standards Toolkit- Use assessments at teacher's discretion.   http://standardstoolkit.k12.hi.us/common-core/mathematics/mathematics-assessments/assessment-listing/?code=K.OA **Suggested Assessment: Hidden Pennies (KOA3), Bananas (KOA1), Drawing 0-20 (KCC3,4)**   See State Document – Unit 5

Technology: Videos, Websites, Links
Mega Math   Destination Math   Xtramath.org   Ipad Apps

APPENDIX A—TABLE

	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**
Put Together / Take Apart	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	("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