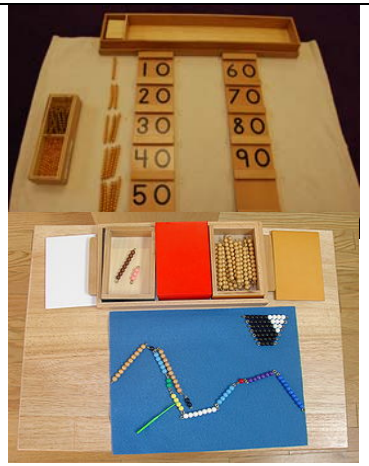
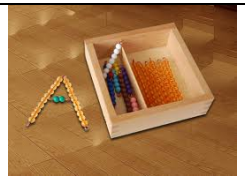
Grade Level	KG	**Content Area**	**Mathematics (K-8)**
Course Title (grades 9-12 Only)	n/a		
Length of Unit	8 – 10 weeks	**Time of Year**	Fall

Expected Prior Knowledge
The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.
	• Ability to sit & attend 20-30 min lesson (actively listen) w/out becoming distracted
	• Understands number & symbol relationship 0-9 ("making 10's")
	• Previous experience w/Addition Snake Game
	• Previous experience adding & subtracting fact families (1-10 addition; 1-18 subtraction)
	• Reading & writing numerals 0-10
	• Previous experiences w/Addition & Subtraction Memorization Strip Boards
	• Previous lessons on Parts of Equations: addend, sum, minuend, subtrahend, difference
	  o Understands the meaning of the '+' symbol as add (put together)
	  o Understands the meaning of the '-' symbol as subtract (take away)
	  o Understands the meaning of the '=' symbol as 'equal to'; 'sum'; 'difference'		

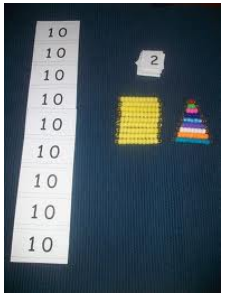
Alignment to Program of Instruction *Briefly outline methods of instruction found in this sequence of lessons that align to the Program of Instruction described in A.3.*	Bead counting is used in many of the Montessori method math lessons to demonstrate the connection between the quantity and the abstract concept of numerals. In the case of place value and working with numbers 11 – 19 several Montessori materials are used in conjunction to gain mastery and understanding. The first set of Montessori materials is the snake game. In this material the student has already mastered the concept of 10 being represented in the golden chain of ten beads. To reach mastery of this standard the student adds 1 to 9 bead sections to the golden bead to gain understanding of the numbers 11 – 19. This is accomplished by building a long chain of bead sections that the student matches and rearranges (addition) and then deconstructs this chain down (subtraction). With each step in the process the student writes down the beads quantity in numerals and uses the math symbols to demonstrate understanding of the mathematical equations used in composition and decomposition. The second material used to achieve the goals of this standard are the teen boards. This material allows the student to slide wooden cards into the second place to form the teens. For example a ten with a one slid over the zero create eleven. The student is given one on one instruction and the verbal instructions given from the teacher to the student are repeated by the student back to the teacher during the lesson until the teacher is confident that the student is ready to work with the material correctly. These two materials can be used together to further reinforce the concepts (the bead chains next to the teen board.) Once the two materials have been mastered the student is able to write and say the 11 – 19, understand the connection between the words, numbers, and quantity, be able to write, say, and check composition and decomposition equations, and be able to precisely demonstrate checks on their own work or other's work.		
Standard Number and Description *List the Number* and full description for the required Standard.*	Grade: K K.NBT.1 Domain: Numbers and Operations in Base Ten (NBT) Cluster: Work with numbers 11–19 to gain foundations for place value. Standard: #1 - Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three,		

	four, five, six, seven, eight, or nine ones.
Summative Assessment *Describe a cumulative and comprehensive activity, clearly separate from instruction and guided or independent practice, which allows each student to individually demonstrate mastery of the required Standard. A copy of the summative assessment must be attached to the curriculum sample.*	Students **demonstrates level of mastery** using Montessori materials: • TEENS BOARD—"Table of Seguin" • POSITIVE SNAKE GAME ✓ **The student will be able to compose** numbers from 11-19 into groups of 10's and groups of 'units' with 80% accuracy across 3 separate occasions. Records/illustrates addition compositions. 10 + 1 = 10 + 2 = 10 + 3 = … *19 + 1 = 20 (end point)* (includes all teen tables) 11 + 1 = 12 + 1 = 13 + 1 = … ✓ **The student will be able to decompose** numbers from 11-19 into groups of 10's and groups of 'units'. Records/illustrates subtraction decompositions: 19 – 1 = 19 – 2 = 19 – 3 = … 20 – 1 = 19 (end point) (includes all teen tables) 11 – 1 = 12 – 1 = 13 - 1 = … ***Work recorded in math journals (if you use these) can also be assessed for mastery.***
Scoring Scale and Mastery Level *Explain how the assessment is scored, to include points per question, how points are awarded, total points possible, criteria necessary to demonstrate mastery, and grading scale. A copy of the answer key and scoring rubric (whichever applicable*	**Elements of Mastery:** ***put these in a checklist/rubric format & attach at end*** ***Addition--Composition*** Counts aloud forward from 11-19 accurately Using material demonstrates teens with bead bar 1:1 correspondence Reads equation accurately *("Eleven plus three equals fourteen.")* Records/represents addition layout accurately Graphically Equation (Vocabulary) Matches words to quantities 11-19. Demonstrates the 'inverse' of addition by using subtraction as "control of error". Articulates the inverse (fact families)

	Subtraction--De-Composition Counts aloud backward from 11-19 accurately Reads equation accurately *("Seventeen minus (take away, subtract, etc.) three equals fourteen.")* Records/represents subtraction layout accurately Graphically Equation Demonstrates the 'inverse' of subtraction by using addition as "control of error". Articulates the inverse (fact families)
Materials/Resources Needed	**Montessori Materials:** ✓ **Table of Seguin "Teens Board"** Box colored bead bars from 1:10 Box w/9 gold bars of 10 2 boards w/ten set of brackets into which the symbols may slide A set of symbols from 1-9 ✓ **Addition Snake Game** Box of gold 10 bars Box of colored bead bars 1-9 Box of "remainder" bars (black & white) **Other Materials and/or Resources:** Presentation/work rug/surface Graph paper (eg; 1 x 1 sq.cm.) Colored pencils  

* ***Standard Number****: For English Language Arts (Reading and Writing), use Grade, Strand, Standard (e.g., 3.RI.2). For K-8 Math, use Grade, Domain, Standard (e.g., 6.EE.7). For HS Math, use Conceptual Category-Domain, Standard (e.g., A-REI.6). For Science, use Grade, Strand, Concept, PO (e.g., 4.1.3.1).*

Lesson (add as needed)	**Instruction**	**Student Activities**
1	During the first lesson the teacher sits next the student and lays out the teen board. Then the teacher lays the golden bead bars (a linked chain of ten beads) next to the board at each level (ten times). Then the teacher explains that adding one bead next the golden bead bar is equal in quantity to the number on the teen board of eleven. At this point the teacher slides the number "1" onto to the board demonstrating the concept of the numerical "11" is equal to the quantity of beads laid out. The teacher then puts two beads next the golden bead bar thereby demonstrating twelve. The teacher follows this sequence down through the number 19. Once the teacher has demonstrated this exercise the student is given the chance to repeat the lesson back to the teacher to demonstrate that the student fully understands the concepts. This process will continue until student has mastered the concept of numbers representing the quantities of 11-19	Student demonstrates independently, comprehension of number and quantity equivalents. The student is given a sheet to show which beads are equal to the corresponding numeral. The student lays the beads down on top of the appropriate bead combination outline and then writes the numeral underneath the beads. Student will continue this process for number 11-19.
2	During the second lesson the teacher opens the bead game box and lays the lid on the table which then becomes the working space for the lesson. Next, the teacher lays out the single remainder bead (black and white beads in the photo) to the side followed by the second remainder and so on through five. Teacher then proceeds with the quantity six represented by a five bead and a one bead and follows this pattern through a quantity of nine. The teacher lays out a combination of beads on the other side of the demonstration area to equal ninety in various groups of ten while zig-zaging around the work space forming a "snake". Teacher then orally counts the bead combination, demonstrating that the two bead groups together are equal to the quantity of ten. The teacher now exchanges the quantity of ten beads for a golden bead bar. Lesson continues with teacher demonstrating to student that various quantities can be combined to make a quantity of ten. The teacher then invites the student to count and make different combinations while exchanging each quantity	The student is given a recording paper, pencil and a quantity of beads. Student will construct various combinations of the quantities 11-19. Student will self-check work by comparing quantity combinations to the golden bead bar. If student determines work to be correct, then student will record the numbers on paper.

	of ten for a golden bead bar. This process continues until all of the combinations are used. To verify accuracy, the teacher will evaluate to see whether student has mastered concept or should revisit lesson. This process will continue until student has mastered the concept of numbers representing the quantities of 11-19 	
3	Snake Game with Remainder Teacher opens bead box and places lid in the corner of work space. Teacher then takes out one remainder bead and places first bead in the corner, followed by the "two bead" where it is placed beneath the "one bead" and so on…until it comes to the number six, in which teacher takes out a five bead and pairs it with a "one bead" making a quantity of six. This process continues until the quantity of nine is completed.  Teacher then proceeds to make a "snake" on the other side of the work space, by making various combinations of "10" and placing the beads combos in a zigzag pattern to create the snake. When teacher reaches 40, then teacher continues randomly in a zigzag pattern with bead combinations that may or may not be equal to 10, up to 100. Teacher then shows student how to count the beads, for every 10 beads, student will trade for a golden bead bar. This process takes place for the first 4 sets of 10. Following that, the teacher counts with child to determine that there are more than 10 beads. A toothpick is placed at the end of the 10th	The student will practice combinations of 11-19 by use of the Addition strip board. Student will practice making combinations of numbers to equal the quantity of 1-19. Student will record number combinations on paper. Student will self-check with the control board.

	bead and the first 10 beads are exchanged for a golden bead bar. A "remainder bar" is placed in exchange for everything that is more than 10 (or until you get to the end of that combination bar) . This process continues until student grasps the concept of "remainder".	
4	In the fourth lesson the teacher and student set out the beads on the table. The teacher asks the student to compose the bead chains to correspond with the numbers. Once the child has completed this the teacher asks the student to write the mathematical equation required to compose 11 – 19. For example 10 + 5 = 15. After Each of these has been completed the teacher asks the student to reverse the equations to have ten be the answer (19 – 9 = 10).	The student is given a sheet of paper and asked to draw each one of the equations represented in this last lesson in bead form. The student then draws out in beads 10 + 1 = 11 up to 10 + 9 = 19 and similarly for decomposition 19 – 9 = 10.

Paste Summative Assessment Here:

- ✓ **The student will be able to compose** numbers from 11-19 into groups of 10's and groups of 'units' with 80% accuracy across 3 separate occasions.
  Records/illustrates addition compositions.
  10 + 1 =
  10 + 2 =
  10 + 3 =
  …
  19 + 1 = 20 (end point)

  (includes all teen tables)
  11 + 1 = 12 + 1 = 13 + 1 = …

- ✓ **The student will be able to decompose** numbers from 11-19 into groups of 10's and groups of 'units'.
  Records/illustrates subtraction decompositions:
  19 – 1 =
  19 – 2 =
  19 – 3 =
  …
  20 – 1 = 19 (end point)

  (includes all teen tables)
  11 – 1 = 12 – 1 = 13 - 1 = …

Paste Answer Key/Scoring Rubric Here: Total possible points = 33. Total points needed for 80% mastery is 27.

Kindergarten Math Assessment Rubric SAMPLE

Student:	Date:		
Text Structure: Work with numbers 11-19 to gain foundation for place value.			
Standard/Objective: #1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by drawing the equation (e.g., 18= 10+8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.			
Criteria for Mastery: 27 points	1 = Needs more practice	2 = Approaching Standard	3 = Meets Standard
Counts aloud forward from 11-19 accurately	Demonstrates little or no understanding of concept.	Has one or two errors.	No errors. Performed perfectly.
Using material demonstrates teens with bead bar 1:1 correspondence	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.
Reads equation accurately *("Eleven plus three equals fourteen.")*	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.
Records/represents addition layout accurately Graphically Equation	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.
(Vocabulary) Matches words to quantities 11-19	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.
Demonstrates the 'inverse' of addition by using subtraction as "control of error".	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.

Articulates the inverse (fact families)	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.
Counts aloud backward from 11-19 accurately	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.
Reads equation accurately *("Seventeen minus (take away, subtract, etc.) three equals fourteen.")* Records/represents subtraction layout accurately Graphically Equation	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.
Demonstrates the 'inverse' of subtraction by using addition as "control of error".	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.
Articulates the inverse (fact families)	Demonstrates little or no understanding of concept	Has one or two errors.	No errors. Performed perfectly.
		TOTAL POINTS	
OBSERVATION NOTES:			