Grade Level	Content Area	Course Title *(For 9-12 Samples Only)*	Unit Title
Grade KG	**Mathematics**		Manipulatives + Literature = Mathematical Thinkers

Length of Unit	Time of Year Taught	Expected Prior Knowledge
1 week	Spring Quarter	Count and write numbers to 31; Count to tell number of objects in a given set

Unit Description The children will discover how to solve word problems and mathematical equations through hands-on manipulatives. The students will be provided experiences and exposure to the connecting and symbolic levels of addition and subtraction.

Standards: Common Core State Standards for Mathematics	**Domain:** Operations and Algebraic Thinking **Cluster:** Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. **Standard**: #1 Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
Summative Assessment *In addition to the description, include a copy of the summative assessment in the application package.*	In this **adding and subtracting** assessment, students use counters or connecting cubes to help write addition and subtraction sentences. Students solve six problems. The directions will be given verbally and the first problem should be worked with the students to ensure understanding of the direction.
Scoring for Summative Assessment *In addition to the description, include a copy of the answer key and scoring rubric (if applicable) for the summative assessment in the application package.*	Each section completed will be worth 5 points. For example, 3+4=7 worth 5 points. 7-4=3 worth 5 points. The word problem is worth 10 points (5 points for the equation and 5 points for the answer) for a total of 50 points. The word problem will be read aloud to the students. Students will be provided counters or connecting cubes for help. Mastery is set at 80%. Student must achieve 40 points for mastery.
Materials/Resources Needed *Include all items for the entire unit.*	Books: Two Little Witches by Harriet Ziefert, Domino Addition by Lynette Long, The M & M's Counting Book by Barbara McGrath, Elevator Magic by Stuart J Murphy; Quack and Count; Magic number sentences (1 per child); Stickers; set of real dominos; Dominos; Domino Addition paper; crayons, dot stickers, or markers; dice; number lines; counters; M & M's; number lines; Unifix Cubes (7 per student)

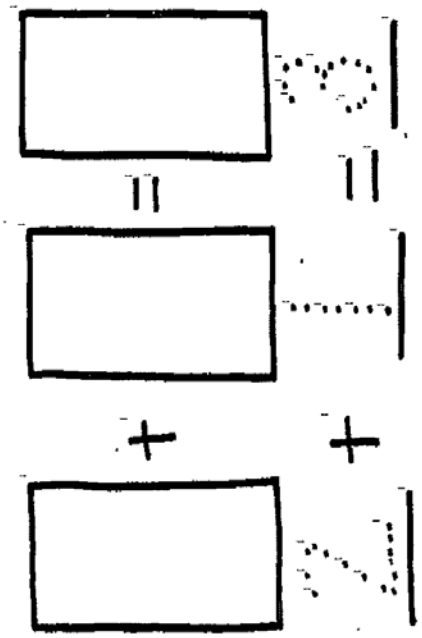
	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Instruction and Timeline	Time: 30 minutes total lesson Key Vocabulary: More Set Less Sum Plus Read The M & M's Counting Book. Tell students to listen carefully to each number read in the story and have them model the number. Put students in groups and give each group a set of Double 6 dominoes. Hold up/display on overhead a domino. Have children count the total number of dots. Then have them look in their set to find a domino that has the same number of dots; one that has one more dot; and one that has one less dot. Model and have students hold a domino vertically. Ask them to count the spots on the top part of the domino and write the number. Then have them count the spots on the bottom part and write the number under the first number they wrote.	Time: 30 minutes total lesson Key Vocabulary: Sum Difference Introduction: Tell students that they will find "sums" using the number line model. Display a large number line and a 5+4 domino (a domino with 5 spots on one side and 4 spots on the other) Demonstrate with a counter how a hop of 5 is taken on the number line. (Encourage students to count aloud as the hop is made.) Then make a hop of 4, starting at the place the counter landed. Say, "If you take a hop of five spaces and then a hop of four spaces, you land on 9. Write the equation 5+4=9 Introduction: Tell students that they will find "differences" using the number line model. Display a large number line and a 5-4 domino. Demonstrate with a counter how a hop of 5 is taken on the number line. (Encourage students to count aloud as the hop is made.) Then count back of 4 till the place the counter landed. Say, "If you take a hop of five spaces and then count back of 4, you land on 1. Write the equation 5-4=1 After several trials, put the	Time: 30 minutes total lesson Key Vocabulary: Number Sentence Addition Equals Read Two Little Witches and discuss the term "number sentence." Use different attributes of the children from the story to make number sentences. For example: 2 girls plus 3 boys equal 5 children. Give each child a "magic number sentence." (Appendix F) Evaluation: The student will: Add two groups of objects correctly Demonstrate understanding of the terms "plus" and "equals" by correctly doing the activity	Time: 30 minutes total lesson Key Vocabulary: Number Sentence Addition Subtraction Equals Plus Minus Read Domino Addition and discuss the terms "number sentence," "plus," and "equals." In a large group, give each child a real domino. Have each child practice saying the number/addition sentence represented on the domino (number+number=number). The teacher writes the addition problem on the board to give visual reinforcement to the term "number sentence." Provide students with Domino Addition Paper and stickers. Extension Activity: Give students graph (see Appendix H) and two dice. Once activity is complete, have students tell you a fact about their results. Read Elevator Magic and discuss the terms of "minus".	Time: 30 minutes total lesson The math centers the students will be participating in this activity will develop a sound basis in the concept level and provide experience and exposure to the connecting and symbolic levels of subtraction. Key vocabulary: Sum, Addend, Numeral, all together, equals, how many, in all, more, plus Give each student seven Unifix® cubes (the set of seven may be in a variety of colors) to explore and manipulate. Encourage students to combine them into groups in a variety of ways. Gather students together on the rug near a whiteboard leaving their Unifix® cubes at their desks. Read the book *Quack and Count* to the class. Point out the addition problems throughout the story. A student in the class is more than likely going to point out that all the addition problems in the book have a sum of seven. Discuss with the class there are many ways to make seven and we are going to practice them today.

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
	Introduce the addition sign and have them draw a line under the bottom number. Then have them count the number of spots in all to get the sum. Have students to continue this procedure with several dominoes and share results with a partner. Repeat the above step holding the domino horizontally. Evaluation: Ask the following questions to determine understanding: How many spots were on this part of the domino? On this part? In all? Are there more or less on this next domino? How can you tell? What is alike between the two ways we recorded the sums? What was different? Can you find a domino with 5 spots? With 10? I am thinking of a domino with six spots. What could it look like? Could it look any other way? What does the plus sign mean? What is the largest number you can show on your fingers? What is the largest number modeled on a set of dominoes? Which is greater?	students in pairs and give each pair some dominoes, a counter, and individual number lines. *Encourage students to predict the sums and differences and verify their predictions by moving a counter forward and backward on the number line. Call students back together for group discussion of what they did. Encourage them to use the number line in their explanations. Ask, "If I take a hop of 5 and then a hop of 4 where will I land? How about if I take a hop of 4 and then a hop of 5? Will this work every time? Encourage them to explore the order property. More examples may be needed. Evaluation: The following questions will aid in understanding the students' current level of knowledge and skill with this concept: What number did you land on when you made a 5-hop, then a 3-hop? What number did you land when you made a 5-hop, then back a 3-hop? What sums and differences did you model with hops? How did you record them? Were any of the sums the same? Why? How would you find the sum of 5 and 2? How would you find the difference between 5 and 2? How would you tell a friend to add or subtract on the number line?		Give each child a set of cubes. Have each child practice saying the number/subtraction sentence represented on the cubes. (number-number=number). The teacher writes the subtraction problem on the board to give visual reinforcement to the term "number sentence." Evaluation: The student will: 1. Add or subtract two sets numbers correctly 2. Recognize and say the symbols "+" "-" and "=" when reading a number sentence 3. Illustrate correctly a number sentence using dots on a domino and cubes.	Introduce the numerals on the board as ways to represent the physical Unifix® cubes. Walk the students through the concept, connecting, and symbolic levels of addition. Have the class read the addition problem out loud with you (ex. "Two plus five equals seven"). Explain to the class the process of addition. In addition we combine sets of objects together to find out how many we have all together. Explain how we use addition to solve real life problems (e.g. adding coins together to buy a candy bar, adding number of boys and girls in class, adding number of plates needed for dinner, etc.). After modeling this procedure several times, introduce the class to the *Quack Addition* recording sheet on an overhead. Demonstrate how to record their answers on their paper. Allow students to return to the desks and their Unifix® cubes and play "Quack" on their own and record their addition problems on the paper. When students have completed the Quack Addition recording sheet, they may choose a math center focusing on addition.

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Student Activities and Timeline	As students listen to book, they will model each number as it is mentioned with coated chocolate candies, and then write the numeral for each. Students will use dominoes to count and answer questions given by teacher. Student will count number spots, write addition problems, record the sum and read the addition sentence to a friend (Appendix G).	Students will take turns moving the counter on the number line to find the sums and differences shown on the domino and record the hops in pictures. Students will predict the answers to questions such as "If I take a hop of 3 and then a hop of 5, where will I land?" "If I take a hop of 5 and then back a hop of 3, where will I land?" Students will make up 2 similar problems on a piece of paper and trade with a friend. Students will then solve their partners' problems using the number line.	Children trace the dotted numbers on the "magic number sentence" to reveal the addition problem. Children place stickers in the boxes to correspond to the numbers written below and write the answer in the box. Children share their number sentence using the math vocabulary of "plus" and "equals."	Students will work independently to create their own domino by making dots on each side of the Domino Addition Paper. Students will share their domino with the class by giving the number sentence. The student will roll the dice and add up the numbers on them. They will then mark the answer in the appropriate box on the graph. Repeat at least ten times. The students will use cubes to make subtraction number sentences and share the results with the class.	One student will come up and break the Unifix® cube train of seven cubes into two pieces and say "Quack" when it breaks. Have the student hide one hand behind his/her back and hold the other hand in front of him/her. Have the class help you count the number of cubes in the student's hand. Write this numeral on the board as the first addend. Have the student show the cubes behind their back and count them together as a class. Write this numeral on the board as the second addend below the first numeral/addend. As a class, brainstorm a list of ideas of things we combine or add together. Continue playing "Quack" several more times, giving several students an opportunity to come up and help.

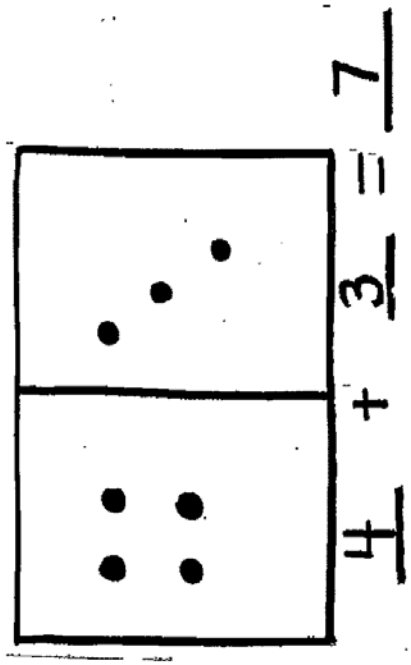
Appendix F

ADDITION SENTENCE

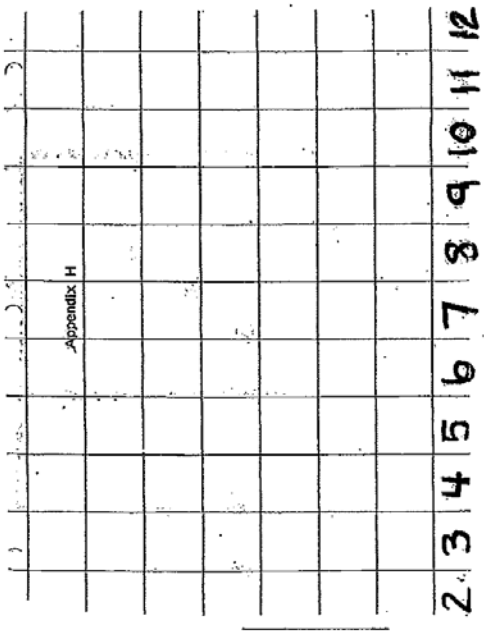


Appendix G

DOMINO ADDITION

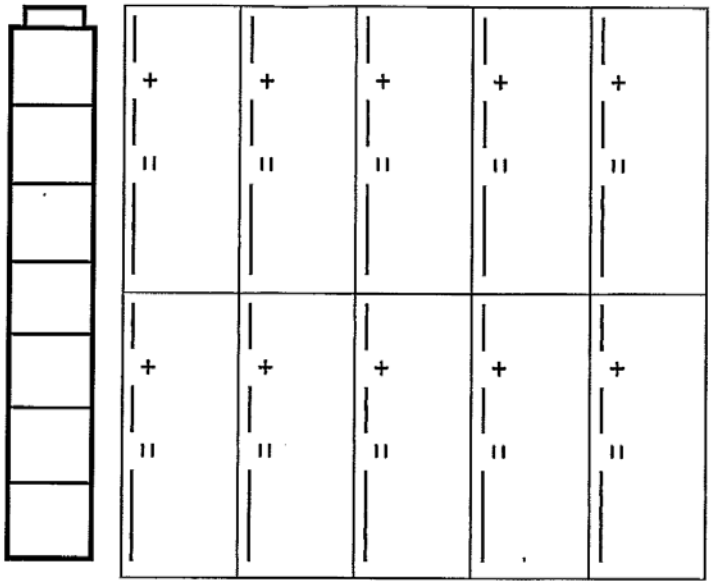


Appendix H



Name_____

"Quack" Addition



Adding and Subtracting

Answer Key

1. 3 + 4 = 7, 7 – 4 = 3
2. 6 + 2 = 8, 8 – 2 = 6
3. 4 + 6 = 10, 10 – 6 = 4
4. 5 + 5 = 10, 10 – 5 = 5
5. 6 + 3 = 9, 9 – 3 = 6
6. 7 – 2 = 5

Final Assessment

Name _____

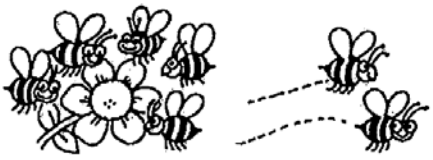
Adding and Subtracting

You need counters or connecting cubes. Listen and do.

	Put in.	Put in.	Write the addition sentence.	Take away.	Write the subtraction sentence.
1.	3	4	3 + 4 = 7	4	7 − 4 = 3
2.	6	2		2	
3.	4	6		6	
4.	5	5		5	
5.	6	3		3	

Story Corner

6. Look at the picture.
   Make up a story problem.



Write the number sentence. _____ ◯ _____ = _____

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