TRG Math Pacing Guide
Grade: K

Trimester 1			
September	**October**	**November**	
K.MD.B.3 **K.CC.B.4** **K.CC.B.4a**	**K.CC.A.1;** **K.CC.A.3;**	**K.CC.B.4b;** **K.CC.B.4c** **K.CC.B.5**	
Individual School Improvement Standards			
Individual Classroom Intervention Standards			
Trimester 2			
December	**January**	**February**	
K.CC.A.2; **K.CC.C.6**	**K.G.A.1** **K.G.A.2** **K.G.A.3**	**K.G.B.4** **K.G.B.5** **K.G.B.6**	
Individual School Improvement Standards			
Individual Classroom Intervention Standards			
Trimester 3			
March	**April**	**May**	**June**
K.MD.A.1 **K.MD.A.2** **K.CC.C.7**	**K.NBT.A.1** **K.OA.A.4**	**K.OA.A.1** **K.OA.A.2**	**K.OA.A.3** **K.OA.A.5**
Individual School Improvement Standards			
Individual Classroom Intervention Standards			

GRADE: K	SUBJECT: Math	STRAND: Counting and Cardinality	MONTH(S) TAUGHT:

CODE: **K.CC.1**	Description: Know number names and the count sequence. 1. Count to 100 by ones and by tens: This standard is developed throughout the year. The target for this unit is counting to 20 by ones, but this number should not be a limit. It is crucial that students know the number names and count sequence and incorporate counting in daily activities in the classroom.
	ACT/Anchor Standard: Reason abstractly and quantitatively; Construct viable arguments and critique the reasoning of others.
	Board Objective: Numbers have names and we can use them to count.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Performance tasks Teacher observation Checklists Drawings/ Illustrations Students rote count by starting at one and counting to 100. When students count by tens they are only expected to master counting on the decade (0, 10, 20, 30, 40 ...). This objective does not require recognition of numerals. It is focused on the rote number sequence K.CC.A.1 is developed	The emphasis of this standard is on the counting sequence. 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). Students are to rote count (verbal saying of numbers in sequence) by starting at one and count to 100. (They are only expected to master counting on the decade (0, 10, 20, 30, 40 …). This objective does not require recognition of numerals. It is focused on the rote number sequence. Provide settings that connect mathematical language and symbols to the everyday lives of kindergarteners. Support students' ability to make meaning and mathematize (the process of seeing and focusing on the mathematical aspects and ignoring the nonmathematical aspects. Mathematizing in Kindergarten: Solving problems, Communicating or showing their thinking, Connecting and Representing Ideas) the real world. Help them see patterns, make connections and provide repeated experiences that give students time and opportunities to develop understandings and increase fluency. Encourage students to explain their reasoning by asking probing questions such as —How do you know? —How did you figure that out? 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. (Meaningful Counting) Examples: · Count the number of chairs of the students who are absent	Concrete: Pictorial: Abstract:

throughout the year. It is crucial that students know the number names and count sequence and incorporate counting in daily activities in the classroom.	· Count the number of stairs, shoes, etc. · Counting groups of ten such as —fingers in the classroom (ten fingers per student). · Count the number of students in a group. · Count the number of specific object they have in their desk (e.g. crayons) 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. Have students verbalize the patterns they see. **Accurate in counting depends on three things:** 1. Knowing the patterns in the number-word list so that a correct number-word list can be said 2. Correctly assigning one number word to one object (one-to one-correspondence) 3. Keeping track of which objects have already been counted so that they are not counted more than once. Keeping tract—differentiating counted from uncounted entities—is more easily done by moving objects into a counted set. Doing so I not possible with things that cannot be moved, such as pictures in a book. Strategies for keeping track of messy, large sets continue to develop for many years. Regularity and rhythm are important aspects of counting. Activities that increase these aspects can be helpful to children making lots of correspondence errors. **Errors in Counting:** Four factors strongly affect accuracy in counting correspondence: · Amount of counting experiences (more experience leads to fewer errors) · Size of set (children become accurate on small sets first) · Arrangements of objects (objects in rows make it easier to keep track of what has been counted and what has not) · Effort	
RESOURCES:	VOCABULARY:	

http://www.illustrativemathematics.org/ Sequenced Units: http://www.ccsstoolbox.com/ http://illuminations.nctm.org/ActivityDetail.aspx?ID=75 http://www.kidport.com/GradeK/Math/NumberSense/MathKNumbers.htm http://www.thinkfinity.org	Count Number Tens Ones Next One more Numeral Number words (one to twenty)
ESSENTIAL QUESTIONS:	
HOW DO WE COUNT? WHAT NUMBER PATTERNS DO YOU SEE? WHAT NUMBER PATTERNS DO YOU HEAR?	

GRADE: K	SUBJECT: Math	STRAND: Counting and Cardinality	MONTH(S) TAUGHT:
CODE: K.CC.A.2	Description: Count forward beginning from a given number within the known sequence (instead of having to begin at 1).		
	ACT/Anchor Standard: Reason abstractly and quantitatively		
	Board Objective: I can count forward starting at a given number.		

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Skill-Based Task: Have the student orally count from a given number (e.g., "Start at six and count until I tell you to stop"). Have the student stop at 20. Have the student orally count from a given number (e.g., "Start at 34 and count until I tell you to stop"). Have the student stop at 47. **Problem Task:** Kwan had 11 marbles. On his birthday his brother gave him 5 more. Count on to determine how many marbles Kwan has all together. Lisa has 25 shirts. She bought 8 more. Count on to see how many shirts she has now.	Students begin a rote forward counting sequence from a number other than 1. Thus, given the number 4, the student would count, "4, 5, 6, 7 ..." This objective does not require recognition of numerals. It is focused on the rote number sequence 0-100.	Teacher models counting on strategies. Daily number line activities: Count how many days you have been in school. Play a counting game, starting with a number other than one. For example, students start counting from three, and whoever is number 11 must sit down. Question of the day: Answers are grouped in fives and/or tens. Start counting from one set forward. Number of the day: Orally count on from that number to a larger number.

Teacher observation Checklists Drawings/ Illustrations		

RESOURCES:	VOCABULARY:
http://www.theteacherscorner.net http://illuminations.nctm.org/Lessons.aspx	count, number names from 1-100, counting on, order, ones, before, after, in all, how many

ESSENTIAL QUESTIONS:
What are numbers? What is counting and how can it be used?

GRADE: K	SUBJECT: Math	STRAND: Counting and Cardinality	MONTH(S) TAUGHT: Y

CODE: K.CC.A.3	Description: 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). Students write the numerals 0-20 and use the written numerals 0-20 to represent the amount within a set. For example, if the student has counted 9 objects, then the written numeral "9" is recorded. Students can record the quantity of a set by selecting a number card/tile (numeral recognition) or writing the numeral. Students can also create a set of objects based on the numeral presented. For example, if a student picks up the number card "13", the student then creates a pile of 13 counters. While children may experiment with writing numbers beyond 20, this standard places emphasis on numbers 0-20.
	ACT/Anchor Standard: **Model with mathematics**
	Board Objective: I can write a number for a group of 0 to 20 objects.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Students will count sets of objects, identify the quantity, and associate a numeral card with the set. Students will begin at zero and write the numbers 0-20 in sequential order. **Problem Task:** Students are given several sets of random quantities from 0- 20.	Due to varied development of fine motor and visual development, reversal of numerals is anticipated. While reversals should be pointed out to students and correct formation modeled in instruction, the emphasis of this standard is on the use of numerals to represent quantities rather than the correct handwriting formation of the actual numeral itself.	Teacher models how to count sets of objects from 0 to 20, and shows how the last number named tells the number of the objects counted. Students practice counting sets of objects from 0 to 20 and identifying the quantity using the last number named. Teacher models how to count sets of objects from 0 to 20 and shows how to associate a written numeral to identify the quantity. Students practice counting sets of objects from 0 to 20 and associating a written numeral to identify the quantity. Teacher models how to use numeral cards to identify

Students are asked to identify the quantity of each set and match a numeral card to show the value of each set. Students are given a 21-grid to write the numerals 0-20 in sequential order.		random quantities from 0 to 20. Students practice identifying random quantities from 0 to 20 and associating a numeral card to identify the set. Teacher models how to write the numerals from 0 to 20 in sequential and random order.

RESOURCES:	VOCABULARY:
Variety of concrete manipulatives http://www.uen.org/k-2interactives/math.shtml Variety of pictorial representations Numeral cards from 0 to 20 http://www.hubbardscupboard.org/math.html	set, numeral, number, number names zero to twenty, quantity, orde

ESSENTIAL QUESTIONS:
What are numbers? What is counting and how can it be used?

GRADE: K	SUBJECT: Math	STRAND: Counting and Cardinality	MONTH(S) TAUGHT:

CODE:	Description: Understand the relationship between numbers and quantities; connect counting to cardinality.
K.CC.B.4	**a**. 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. **b.** 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. **c.** Understand that each successive number name refers to a quantity that is one larger. Students count a set of objects and see sets and numerals in relationship to one another. These connections are higher-level skills that require students to analyze, reason about, and explain relationships between numbers and sets of objects. The expectation is that students are comfortable with these skills with the numbers 1-20 by the end of Kindergarten.
	ACT/Anchor Standard: **Model with mathematics; Reason abstractly and quantitatively.**
	Board Objective: I can understand that adding and object to a group will make the total number bigger. I can understand that the number of objects in a group can be rearranged and the total number will be the same. I can understand that the last object counted tells the number of objects in a group. I can name a group of objects by using a number. I can put numbers in order.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Place a set of objects in front of the student. Ask them to count and tell you how many. Have the student make a group of 12. Then add one more and tell you how many.	a. Students implement correct counting procedures by pointing to one object at a time (one-to-one correspondence), using one counting word for every object (synchrony/ one-to-one tagging), while keeping track of objects that have and have not been counted. This is the foundation of counting. b. Students answer the question "How many are there?" by counting objects in a set and understanding that the last number stated when counting a set (...8, 9, **10**) represents the total amount of objects: "There are **10** bears in this pile." (cardinality). Since an important goal for children is to count with meaning, it is important to have children answer the question, "How many do you have?" after they count. Often times, children who have not developed cardinality will count the amount again, not realizing that the **10** they stated means 10 objects in all. Young children believe what they see. Therefore, they may believe that a pile of cubes that they counted may be more if spread apart in a line. As children move towards the developmental milestone of conservation of number, they develop the understanding that the number of objects does not change when the objects are moved, rearranged, or hidden. Children need many different experiences with counting objects, as well as maturation, before they can reach this developmental milestone.	Teacher models counting and tracking one-to-one correspondence in various methods. "Make a group of _____. Now show me another way to make that number" (e.g., 2 sets of 3 or a set of 5 and 1 to represent 6). "Count these objects. How many objects are in that set?" (Students should use any of the procedures taught to accurately count the objects with one-to-one

Problem Task: I have this many pennies in my pocket. Please count and tell me how many pennies I have. (Teacher places 19 pennies before the students.) Mr. Lincoln needs to borrow 14 erasers. Count out 14 erasers for me to give to him.	c. Another important milestone in counting is inclusion (aka hierarchal inclusion). Inclusion is based on the understanding that numbers build by exactly one each time and that they nest within each other by this amount. For example, a set of three objects is nested within a set of 4 objects; within this same set of 4 objects is also a set of two objects and a set of one. Using this understanding, if a student has four objects and wants to have 5 objects, the student is able to add one more- knowing that four is within, or a sub-part of, 5 (rather than removing all 4 objects and starting over to make a new set of 5). This concept is critical for the later development of part/whole relationships. Students are asked to understand this concept with and without (0-20) objects. For example, after counting a set of 8 objects, students answer the question, "How many would there be if we added one more object?"; and answer a similar question when not using objects, by asking hypothetically, "What if we have 5 cubes and added one more. How many cubes would there be then?"	correspondence.) "Pick a card and count the correct number of objects." "Color the correct number of shapes." "Draw the number of circles I say." "Grab a handful of objects." Students grab a handful of objects and count how many they have.

RESOURCES:	VOCABULARY:
Seuss, Dr. *10 Apples Up on Top*. Random House Books for Young Readers, 1998.	numeral, number, number names, "how many," count, "one more," quantity, set, objects

ESSENTIAL QUESTIONS:
What are numbers? What is counting and how can it be used?

GRADE: K	SUBJECT: Math	STRAND: Counting and Cardinality	MONTH(S) TAUGHT:
CODE: K.CC.B.5	Description: 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.		
	ACT/Anchor Standard: **Model with mathematics; Reason abstractly and quantitatively.**		
	Board Objective: I can count out a number of objects between 1 and 20.		

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations	In order to answer "how many?" students need to keep track of objects when counting. Keeping track is a method of counting that is used to count each item once and only once when determining how many. After numerous experiences with counting objects, along with the developmental understanding that a group of objects counted multiple times will remain the same amount, students recognize the need for keeping track in order to accurately determine "how many". Depending on the amount of objects to be counted, and the students' confidence with counting a set of objects, students may move the objects as they count each, point to each object as counted, look without touching when counting, or use a combination of these strategies. It is important that children develop a strategy that makes sense to them based on the realization that keeping track is important in order to get an accurate count, as opposed to following a rule, such as "Line them all up before you count", in order to get the right answer.	Teacher models how to count objects to find the answer "how many" in a set from 1-20. Students will practice how to count objects to find the answer "how many" in a set from 1-20. Teacher models how to count objects using counting strategies (e.g., one-to-one correspondence, crossing out, beginning from left to right and top to bottom, in a line, rectangular array, or a circle). Students will practice how to count objects using counting strategies (e.g., one-to-one correspondences, crossing out, beginning from left to right, and top to bottom, in a line, rectangular array, or a circle).

		Teacher models how to use counting strategies as listed above to count objects from 1-10 in a scattered configuration. Students will practice a variety of counting strategies to show how to count objects from 1-10 in a scattered configuration.

RESOURCES:	VOCABULARY:
http://www.uen.org/k-2interactives/math.shtml	count, set, objects, array, number line, scattered, how many, order

ESSENTIAL QUESTIONS:
What are numbers? What is counting and how can it be used?

GRADE: K	SUBJECT: Math	STRAND: Counting and Cardinality	MONTH(S) TAUGHT:

CODE: K.CC.C.6	Description: Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.[1]
	ACT/Anchor Standard: **Construct viable arguments and critique the reasoning of others**
	Board Objective: I can tell if a group of objects in one group is greater than, less than, or equal to a group of objects in another group.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Show the students two groups of cubes and have them identify which group has more and which group has less.Show the students a pictograph and have them identity with group is greater, which group has fewer, and which groups are the same. **Problem Task:** Jim has 3 dogs. Marci has 2 dogs. Who has the most dogs? Use a picture or number sentence to show how you came up with the answer. Hyrum has 7 gumballs. Lucy has 6. Mario has 7. Which students have the	Include groups with up to ten objects. Students use their counting ability to compare sets of objects (0-10). They may use matching strategies (Student 1), counting strategies (Student 2) or equal shares (Student 3) to determine whether one group is greater than, less than, or equal to the number of objects in another group.	Working with a partner, students each turn over a number card. They state who has more and who has less. “Eight is more than 5.” If they have the same number, they say, “Three is equal to 3,” and clap hands. Top It! It’s war, but whoever has the “more” number gets to keep both cards. If they are the same, students turn over 2 more cards and determine who has more again. The “winner” keeps all the cards. Students will draw a picture of a domino and circle the number of pips (dots) that is more/less dependent upon the teacher’s instructions. Use dot dice with partners and identify who has more, less or equal. Use tally

same number of gumballs? Justify your answer with a picture, with objects, or in writing. Janice ate 4 cookies. Sasha ate 9 cookies. Which child ate fewer cookies? Show how you came up with your answer using objects, a picture, or writing.		marks to keep score.

RESOURCES:	VOCABULARY:
http://illuminations.nctm.org/ActivitySearch.aspx	more, less, fewer, same, equal, greater than, less than, most, least

ESSENTIAL QUESTIONS:
What are numbers? What is counting and how can it be used?

GRADE: K	SUBJECT: Math	STRAND: Counting and Cardinality	MONTH(S) TAUGHT:

CODE: K.CC.C.7	Description: Compare two numbers between 1 and 10 presented as written numerals.
	ACT/Anchor Standard: **Model with mathematics; Reason abstractly and quantitatively; Construct viable arguments and critique the reasoning of others**
	Board Objective: I can compare two written numbers between 1 and 10.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Problem Task:** Students will identify the specified numeral. Students will touch or draw a circle around the numeral determined by teacher direction (e.g., circle the greater numeral, touch the lesser numeral).	Students apply their understanding of numerals 1-10 to compare one numeral from another. Thus, looking at the numerals 8 and 10, a student is able to recognize that the numeral 10 represents a larger amount than the numeral 8. Students need ample experiences with actual sets of objects (K.CC.3 and K.CC.6) before completing this standard with only numerals.	Teacher will model how to use a number line to visually compare two numerals from 1 to 10. Students will be given opportunities to use objects and number lines to visually compare numbers. Students will use two numeral cards to practice identifying the greater or lesser numeral.

RESOURCES:	VOCABULARY:
	numeral,

	identify, visually, symbol, more, less, compare, sets, greater than, less than, more, less
ESSENTIAL QUESTIONS:	
What are numbers? What is counting and how can it be used?	

GRADE: K	SUBJECT: Math	STRAND: Operations & Algebraic Thinking	MONTH(S) TAUGHT:
CODE: K.OA.A.1	Description: Represent addition and subtraction with objects, fingers, mental images, drawings[2], sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. [2]Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)		
	ACT/Anchor Standard: Model with mathematics		
	Board Objective: I can use objects, fingers, and pictures to help me show addition and subtraction.		
ASSESSMENTS:	CONCEPT NOTES:		STRATEGIES

Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Teacher distributes linking cubes to students. Teacher reads an addition story problem and has students act out the problem using the linking cubes. Teacher distributes linking cubes to students. Teacher reads a subtraction story problem and has students act out the problem using the linking cubes. **Problem Task:** Students create their own addition or subtraction story problem using objects, fingers, mental images, drawings, sounds, acting out situations, or verbal explanations.	Students demonstrate the understanding of how objects can be joined (addition) and separated (subtraction) by representing addition and subtraction situations in various ways. This objective is focused on understanding the concept of addition and subtraction, rather than reading and solving addition and subtraction number sentences (equations). Common Core State Standards for Mathematics states, "Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required." Please note that it is not until First Grade when "Understand the meaning of the equal sign" is an expectation (1.OA.7).	Teachers can tell a story using addition or subtraction to introduce a topic. Teachers can use students to role-play addition and subtraction problems. Teachers may begin instruction by using objects, fingers, mental images, drawings, sounds, acting out situations, or verbal explanations.

RESOURCES:	VOCABULARY:
	join, add, addend, addition, equal to, equation, expression, subtract, sum, difference, plus, minus, separate, combine, put together, total, take away, compare, take apart
ESSENTIAL QUESTIONS:	

WHAT IS ADDITION? WHAT IS SUBTRACTION?

GRADE: K	SUBJECT: Math	STRAND: Operations & Algebraic Thinking	MONTH(S) TAUGHT:

CODE: K.OA.A.2	Description: Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem. Kindergarten students solve four types of problems within 10: Result Unknown/Add To; Result Unknown/Take From; Total Unknown/Put Together-Take Apart; and Addend Unknown/Put Together-Take Apart (See **Table 1** at end of document for examples of all problem types). Kindergarteners use counting to solve the four problem types by acting out the situation and/or with objects, fingers, and drawings.
	ACT/Anchor Standard:Model with mathematics, Make sense of problems and persevere in solving them
	Board Objective: I can solve addition and subtraction word problems within 10.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Teacher dictates an addition story problem. For example: Olivia has 3 lollipops and her friend Sophie 2 lollipops. How	Kindergarten students solve four types of problems within 10: Result Unknown/Add To; Result Unknown/Take From; Total Unknown/Put Together-Take Apart; and Addend Unknown/Put Together-Take Apart (See **Table 1** at end of document for examples of all problem types). Kindergarteners use counting to solve the four problem types by acting out the situation and/or with objects, fingers, and drawings. **Add To Result Unknown** Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2+3=?	In a whole-group setting, teacher dictates a story problem while students create a representation with manipulatives. In partners, students create and solve story problems using manipulatives. In a whole-group setting, teacher and students create and solve word problems using pictures. Individually, students create and

many lollipops do they have all together? Students draw a picture to solve the problem. **Problem Task:** Teacher creates number cards 1 -5. Students will draw two number cards from the pile. Students will create an addition/subtraction problem and solve using illustrations.	**Take From Result Unknown** Five apples were on the table. I ate two apples. How many apples are on the table now? 5–2=? **Put Together/Take Apart Total Unknown** Three red apples and two green apples are on the table. How many apples are on the table? 3+2=? **Put Together/Take Apart Addend Unknown** Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5, 5 - 3 = ?$	solve word problems pictorially. Word problems include addition. Word problems include subtraction. Concrete: Model addition and subtraction using objects, fingers, mental images, drawings, sounds acting out situations, verbal explanations, expressions, or equations.

xample: **Nine grapes were in the bowl. I ate 3 grapes. How many grapes are in the bowl now?**
Student: I got 9 “grapes” and put them in my bowl. Then, I took 3 grapes out of the bowl. I counted the grapes

still left in the bowl... 1, 2, 3, 4, 4, 5, 6. Six. There are 6 grapes in the bowl.
Example: **Six crayons are in the box. Two are red and the rest are blue. How many blue crayons are in**

the box?

Student: I got 6 crayons. I moved these two over and pretended they were red. Then, I counted the “blue” ones... 1, 2, 3, 4. Four. There are 4 blue crayons.

RESOURCES:	VOCABULARY:

Hutchins, Pat. *Ten Red Apples.* Greenwillow Books, 2000. Long, Lynette. *Domino Addition.* Charlesbridge Pub., Inc., 1997. Murphy, Stuart J. *Elevator Magic (MathStart Subtracting).* HarperCollins, 1997.	join, add, addend, addition, equal to, equation, expression, subtract, sum, difference, plus, minus, separate, combine, put together, total, take away, compare
ESSENTIAL QUESTIONS:	
WHAT IS ADDITION? WHAT IS SUBTRACTION?	

GRADE: K	SUBJECT: Math	STRAND: Operations & Algebraic Thinking	MONTH(S) TAUGHT:
CODE: K.OA.A.3	Description: 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). Students develop an understanding of part-whole relationships as they recognize that a set of objects (5) can be broken into smaller sub-sets (3 and 2) and still remain the total amount (5). In addition, this objective asks students to realize that a set of objects (5) can be broken in multiple ways (3 and 2; 4 and 1). Thus, when breaking apart a set (decompose), students use the understanding that a smaller set of objects exists within that larger set (inclusion).		
	ACT/Anchor Standard: Look for and make use of structure		
	Board Objective: I can take apart numbers less than or equal to 10.		

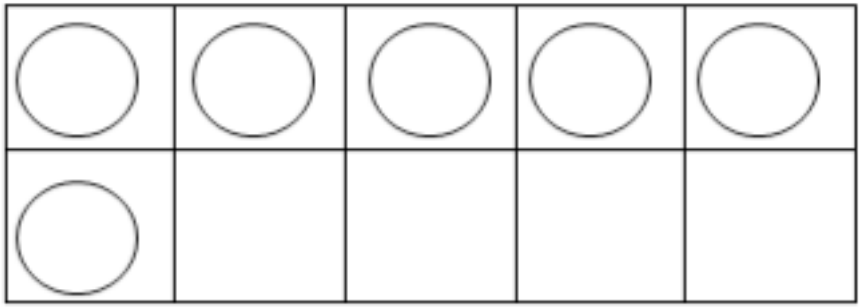
ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Problem Task:** Students will be given seven two-sided counters and will be asked to show a minimum of three combinations of seven. Students will record their results with a drawing or equation.	Example: **"Bobby Bear is missing 5 buttons on his jacket. How many ways can you use blue and red buttons to finish his jacket? Draw a picture of all your ideas.** Students could draw pictures of: 4 blue and 1 red button 3 blue and 2 red buttons 2 blue and 3 red buttons 1 blue and 4 red buttons In Kindergarten, students need ample experiences breaking apart numbers and using the vocabulary "and" & "same amount as" before symbols (+, =) and equations (5= 3 + 2) are introduced. If equations are used, a mathematical representation (picture, objects) needs to be present as well.	Teacher can model decomposition of numbers with story problems on the board and in pictures to introduce the topic. Students use two-sided counters in a container to "shake out" different number combinations (e.g., students are given a cup, five two-sided counters, and a paper with five blank five-frames on it. They shake and toss out their counters, and record by coloring on their five-frames the various number combinations). The teacher can model with students different number combinations of friends in their class (e.g., have five students come up, discuss the different combinations such as girls/boys, laced shoes/non-laced shoes, long hair/short hair, etc.). Play games involving decomposing numbers (e.g., "The Bears Went Over the Mountain," "Hide Bears in the Cave," "Math Story Maps," "Math Mountains"). Sing various songs (e.g., "Five Speckled Frogs," "Five Little Monkeys," "Five Little Ducks").

RESOURCES:	VOCABULARY:

Harvey, Jayne. *Cat Show (All Aboard Math Reader).* Grosset & Dunlap, 2003. O'Brady, Terry. *Count the Animals (Windows on Literacy)*. National Geographic School Publishing, 2002. Jenkins, Emily. *Five Creatures.* Farrar, Straus and Giroux, 2005. Crews, Donald. *Ten Black Dots.* Greenwillow Books, 2010. Sturges, Philemon. *Ten Flashing Fireflies.* North-South/Night Sky Books, 1997.	join, add, addend, addition, equal to, equation, expression, subtract, sum, difference, plus, minus, separate, combine, put together, total, take away, compare, take apart
ESSENTIAL QUESTIONS:	
WHAT IS ADDITION? WHAT IS SUBTRACTION?	

GRADE: K	SUBJECT: Math	STRAND: Operations & Algebraic Thinking	MONTH(S) TAUGHT:
CODE: K.OA.A.4	Description: For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation. Students build upon the understanding that a number (less than or equal to 10) can be decomposed into parts (K.OA.3) to find a missing part of 10. Through numerous concrete experiences, kindergarteners model the various sub-parts of ten and find the missing part of 10.		
	ACT/Anchor Standard: Look for and make use of structure; Reason abstractly and quantitatively		
	Board Objective: I can find the number that is added to 1 through 9 to make 10. I can use objects or drawings to show my answer.		
ASSESSMENTS:	CONCEPT NOTES:		STRATEGIES

Teacher observation Checklists Drawings/ Illustrations **Problem Task:** Students choose a number from 0-9 and then, using a ten frame, draw circles or write how many more they need to get to 10. Repeat the activity for a total of four work samples. **Skill-Based Task:** Students have ten beans, with the sides of the beans colored different colors. Students will shake and spill the beans. They will count how many beans they have of one color and record their answers on using a worksheet with ten circles. Then they will count how many beans they have of another color and then record their answers on the worksheet. Examples for assessment: 1. Students draw the number of colored circles they have using an equation. For example:	Example: When working with 2-color beans, a student determines that 4 more beans are needed to make a total of 10. In addition, kindergarteners use various materials to solve tasks that involve decomposing and composing 10. Example: **"A full case of juice boxes has 10 boxes. There are only 6 boxes in this case. How many juice boxes are missing?** **Student A:** *Using a Ten-Frame* "I used a ten frame for the case. Then, I put on 6 counters for juice still in the case. There's no juice in these 4 spaces. So, 4 are missing." **Student B:** *Think Addition* "I counted out 10 counters because I knew there needed to be ten. I pushed these 6 over here because they were in the container. These are left over. So there's 4 missing." **Student C:** *Fluently add/subtract* "I know that it's 4 because 6 and 4 is the same amount as 10."	Teacher distributes ten frames and two-sided counters to students. Teacher will model how to find the missing addend using the ten-frame. For example: Teacher will ask students to place six counters of one color on the ten frame. Then students will count to find how many are missing to get to the number 10. Students will be given a ten unit and ten unit blocks from a base 10 unit (subtraction bar model). Using the 10 unit as a base, students will build a given number adjacent to the 10 unit. Students will use the comparison model to determine the partner addend. Using ten-frame cards, student will play "Go Fish" (e.g., "I have an eight, I need a two. Do you have a two?").

***** + ***** = ********** 2. Studentswriteth eequationusing numerals. 5 + 5 = 10		

RESOURCES:	VOCABULARY:
Crews, Donald. *Ten Black Dots.* Greenwillow Books, 2010. Duke, Kate. *One Guinea Pig Is Not Enough.* Puffin, 2001. Sturges, Philemon. *Ten Flashing Fireflies.* North-South/Night Sky Books, 1997.	in, add, addend, addition, equal to, equation, expression, subtract, sum, difference, plus, minus, separate, combine, put together, total, take away, compare, take apart
ESSENTIAL QUESTIONS:	

WHAT IS ADDITION? WHAT IS SUBTRACTION?

GRADE: K	SUBJECT: Math	STRAND: Operations & Algebraic Thinking	MONTH(S) TAUGHT:

CODE: K.OA.A.5	Description: Fluently add and subtract within 5. Students are fluent when they display accuracy (correct answer), efficiency (a reasonable amount of steps in about 3-5 seconds* without resorting to counting), and flexibility (using strategies such as the distributive property).
	ACT/Anchor Standard: Make sense of problems and persevere in solving them
	Board Objective: I can add and subtract within 5.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Ask the students to solve addition and subtraction problems within ten mentally. Then have them tell you the strategy they used. This can be done on an individual basis or as a whole group.	Students develop fluency by understanding and internalizing the relationships that exist between and among numbers. Oftentimes, when children think of each "fact" as an individual item that does not relate to any other "fact", they are attempting to memorize separate bits of information that can be easily forgotten. Instead, in order to fluently add and subtract, children must first be able to see sub-parts within a number (inclusion, K.CC.4.c). Once they have reached this milestone, children need repeated experiences with many different types of concrete materials (such as cubes, chips, and buttons) over an extended amount of time in order to recognize that there are only particular sub-parts for each number. Therefore, children will realize that if 3 and 2 is a combination of 5, then 3 and 2 cannot be a combination of 6. For example, after making various arrangements with toothpicks, students learn that only a certain number of sub-parts exist within the number 4: Then, after numerous opportunities to explore, represent and discuss "4", a student	• Using commutative property (e.g., students may say, "I know that 3 + 1 = 4 so 1 + 3 = 4") • Using fact families (e.g., students may say, "I know 1 + 3 = 4 so 4 – 1 = 3") responses) as exit tickets.

Problem Task: Give the student a problem in context, such as the problem below, and ask him/her to solve it using mental strategies. Then have him/her tell you the strategies he/she used. Peter has 4 puppies and Marina has 2 puppies. How many puppies do they have together?	becomes able to fluently answer problems such as, "One bird was on the tree. Three more birds came. How many are on the tree now?"; and "There was one bird on the tree. Some more came. There are now 4 birds on the tree. How many birds came?". Traditional flash cards or timed tests have not been proven as effective instructional strategies for developing fluency.** Rather, numerous experiences with breaking apart actual sets of objects and developing relationships between numbers help children internalize parts of number and develop efficient strategies for fact retrieval. * Van de Walle & Lovin (2006). Teaching student centered mathematics K-3 (p.94). Boston: Pearson. **Burns (2000) *About Teaching Mathematics*; Fosnot & Dolk (2001) *Young Mathematicians at Work;* Richardson (2002) *Assessing Math Concepts*; Van de Walle & Lovin (2006) *Teaching Student-Centered Mathematics*	

RESOURCES:	VOCABULARY:
http://www.theteacherscorner.net http://illuminations.nctm.org/Lessons.aspx	add, subtract, equation, sum, difference, equal sign, plus, minus

ESSENTIAL QUESTIONS:
WHAT IS ADDITION? WHAT IS SUBTRACTION?

GRADE: K	SUBJECT: Math	STRAND: Numbers & Operations in Base Ten	MONTH(S) TAUGHT:

CODE: K.NBT.A.1	
	Description: 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. * Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.
	ACT/Anchor Standard: Look for and make use of structure
	Board Objective: I can put together and take apart numbers from 11 to 19 by naming the tens and ones. I can use objects, drawings or equations to show tens and ones.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Students will correctly model the numbers 11-19 using objects and pictorial representations. Students will write an equation for a given number from 11-19. Students will be able to count from 1-19.	Students explore numbers 11-19 using representations, such as manipulatives or drawings. Keeping each count as a single unit, kindergarteners use 10 objects to represent "10" rather than creating a unit called a ten (unitizing) as indicated in the First Grade CCSS standard 1.NBT.1a: 10 can be thought of as a bundle of ten ones — called a "ten." Example: **Teacher**: "I have some chips here. Do you think they will fit on our ten frame? Why? Why Not?" **Students**: Share thoughts with one another. **Teacher**: "Use your ten frame to investigate." **Students**: "Look. There's too many to fit on the ten frame. Only ten chips will fit on it." **Teacher**: "So you have some leftovers?" **Students**: "Yes. I'll put them over here next to the ten frame." **Teacher**: "So, how many do you have in all?" **Student A**: "One, two, three, four, five... ten, eleven, twelve, thirteen, fourteen. I have fourteen. Ten fit on and four didn't." **Student B**: Pointing to the ten frame, "See them- that's 10... 11, 12, 13, 14. There's fourteen."	Teacher will have students use manipulatives to build representations of numbers from 1-10. Teacher will introduce the numbers 11-19. Teacher will model how to use manipulatives to build representations of the numbers 11-19. Students will make each number after the teacher. Teacher will focus on organizing objects into a group of ten ones and some more ones. The teacher will next need to transfer the skill of building numbers to drawing pictures of

	Teacher: Use your recording sheet (or number sentence cards) to show what you found out.	the numbers 11-19. Teacher will model how to group pictures by circling a group of 10. Pictures can also be used to show how to compose and decompose the numbers 11-19. Lastly, the teacher will take the pictorial representations of the numbers and help students write an equation for the given number. For example:
RESOURCES:	VOCABULARY:	

http://www.theteacherscorner.net http://illuminations.nctm.org/Lessons.aspx	place value, tens, ones, digits, number, decompose, compose, equation, equal, plus, number words 1-19, grouping
ESSENTIAL QUESTIONS:	
WHAT IS BASE TEN AND HOW CAN IT BE USED?	

GRADE: K	SUBJECT: Math	STRAND: Measurement & Data	MONTH(S) TAUGHT:
CODE: K.MD.A.1	Description: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.		
	ACT/Anchor Standard: Use appropriate tools strategically		
	Board Objective: I can tell how an object can be measured.		

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists	Students describe measurable attributes of objects, such as length, weight, size, and color. For example, a student may describe a shoe with one attribute, "Look! My shoe is	Teacher will show an object and ask students to describe

Drawings/ Illustrations **Skill-Based Task:** When given an object, the student can show/tell the teacher at least two ways of measuring the object. **Problem Task:** Students can pick an object in the classroom and describe the measurable attributes of the object.	blue, too!", or more than one attribute, "This shoe is heavy! It's also really long." Students often initially hold undifferentiated views of measurable attributes, saying that one object is "bigger" than another whether it is longer, or greater in area, or greater in volume, and so forth. For example, two students might both claim their block building is "the biggest." Conversations about how they are comparing- one building may be taller (greater in length) and another may have a larger base (greater in area)- help students learn to discriminate and name these measureable attributes. As they discuss these situations and compare objects using different attributes, they learn to distinguish, label, and describe several measureable attributes of a single object. Thus, teachers listen for and extend conversations about things that are "big", or "small," as well as "long," "tall," or "high," and name, discuss, and demonstrate with gestures the attribute being discussed. *Progressions for the CCSSM: Geometric Measurement*, The CCSS Writing Team, June 2012.	the object. Teacher will ask the students if there is anyway to measure the object, discussing different attributes that are measurable. Teacher will pair students up and given them an object. Students will discuss and draw the measurable attributes of the object.

RESOURCES:	VOCABULARY:
	length, width, capacity, weight, measuring, size, attribute, measurable
ESSENTIAL QUESTIONS:	

HOW DO WE MEASURE THINGS? WHY DO WE MEASURE THINGS?

GRADE: K	SUBJECT: Math	STRAND: Measurement & Data	MONTH(S) TAUGHT:

CODE: K.MD.A.2	Description: Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*
	ACT/Anchor Standard: Use appropriate tools strategically
	Board Objective: I can compare how two objects are similar or different.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Problem Task:** Students will bring in a teddy bear to compare with a friend's teddy bear. Students can compare the height, weight, and size of bears. Bears can be sorted by similar sizes or colors into groups. These groups can then be compared to see	Direct comparisons are made when objects are put next to each other, such as two children, two books, two pencils. For example, a student may line up two blocks and say, "The blue block is a lot longer than the white one." Students are not comparing objects that cannot be moved and lined up next to each other. Similar to the development of the understanding that keeping track is important to obtain an accurate count, kindergarten students need ample experiences with comparing objects in order to discover the importance of lining up the ends of objects in order to have an accurate measurement.	Teacher shows students two objects and asks students what they notice about each object, then asks students to compare the objects and explain their thinking. Teacher will stop to explain vocabulary words as they come up in discussion. Teacher will have students pair up and get two objects from the classroom to compare using newly acquired vocabulary words.

which group has more or less of a particular attribute. Students will discuss their findings. Make a “sorting by length” station at which students sort objects as longer, shorter, or about the same as a specified object. Change the reference object as needed. Give pairs of students a strip of tagboard, a stick, a length of rope, or other object with a length dimension. Ask students to find five things in the room that are shorter than, longer than, or about the same length as their object. Students can draw pictures or write the names of the things they find.		Teacher will gather students back together and call up two students at a time for the class to compare the students’ attributes (with the exception of weight). Teachers will then transfer the skill of comparing two objects to comparing two groups of objects. The teacher will show the class two groups of the same object and ask students to compare the groups of objects.
RESOURCES:	VOCABULARY:	

http://pbskids.org/clifford/games/measuring_up.html http://pbskids.org/toopyandbinoo/index.php?ID=MAGC1JE U1 http://pbskids.org/curiousgeorge/games/count_your_chickens/count_your_chickens.html (reviews counting, then moves to comparing groups of chicks) http://www.ixl.com/math/kindergarten/fewer-more- comparing-groups http://www.ixl.com/math/kindergarten/fewer-equal-more Albee, Sarah. *The Dragon's Scales (Step Into Reading, Step 3).* Random house Books for Young Readers, 1998. Jenkins, Steven. *Actual Size*. Houghton Mifflin Books for Children, 2004.	more of, less of, taller/shorter, heavier/lighter, compare, attributes, measuring, height
ESSENTIAL QUESTIONS:	

GRADE: K	SUBJECT: Math	STRAND: Measurement & Data	MONTH(S) TAUGHT:
CODE: K.MD.B.3	Description: Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. *(Limit category counts to be less than or equal to 10)*		
	ACT/Anchor Standard: Look for and make use of structure		

	Board Objective: I can sort categories by the number of objects.	
ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Problem Task:** Divide students to small groups, and have them remove their shoes. Have each group pick a common attribute and sort the shoes accordingly (laces/no laces, color, type, etc.). Have students explain their attributes and identify how many shoes are in each group. Students should identify the groups with the most and least shoes. **Skill-Based Task:** Given objects, students will sort them by an attribute and name the attribute. Given groups or objects sorted by an attribute, students can count each group and identify the group with the most/least of the attribute.	Students identify similarities and differences between objects (e.g., size, color, shape) and use the identified attributes to sort a collection of objects. Once the objects are sorted, the student counts the amount in each set. Once each set is counted, then the student is asked to sort (or group) each of the sets by the amount in each set. Thus, like amounts are grouped together, but not necessarily ordered. For example, **when exploring a collection of buttons:** First, the student separates the buttons into different piles based on color (all the blue buttons are in one pile, all the orange buttons are in a different pile, etc.). Then the student counts the number of buttons in each pile: blue (5), green (4), orange (3), purple (4). Finally, the student organizes the groups by the quantity. "I put the purple buttons next to the green buttons because purple also had (4). Blue has 5 and orange has 3. There aren't any other colors that have 5 or 3. So they are sitting by themselves." This objective helps to build a foundation for data collection in future grades as they create and analyze various graphical representations.	The teacher will call up six students and sort them into two groups based on a common attribute (girls/boys, hair color, shirt color, shoes, etc.). The teacher will ask the class to identify the attribute the groups were sorted by. Repeat until students grasp the concept. Invite a student up to the front of the class to call students up and sort them into two groups. The student who can correctly identify the attribute by which the groups were sorted comes up next. Use one of the website to practice sorting. Divide students into groups to sort objects. Have them tell you the attribute they sorted by, and which group had most/least of the particular attribute. Encourage students to sort by many different attributes.

RESOURCES:	VOCABULARY:
Clifford's Sorting by Color: http://www.scholastic.com/clifford/play/sortitout/sortitout.htm Oscar the Grouch Trash Sorting (by color): http://www.sesamestreet.org/game_player/-/pgpv/gameplayer/0/6759e8da-163b-11dd-98c7-b9f43dcf5330 Sorting objects into two groups (can pick own attribute): http://www.sesamestreet.org/game_player/-/pgpv/gameplayer/0/ee4e481c-2356-11dd-9784-93aface31f69 Zoey Pet Shelter (sorting animals): http://www.sesamestreet.org/game_player/-/pgpv/gameplayer/0/f1d9ed8b-163d-11dd-98c7-b9f43dcf5330&t=1233332286828& Jenkins, Emily. *Five Creatures.* Farrar, Straus and Giroux, 2005. Pluckrose, Henry Arthur. *Sorting (Math Counts).* Children's Press, 1995.	classify, sort, attribute, groups, categories, count

ESSENTIAL QUESTIONS:
HOW CAN OBJECTS BE CLASSIFIED?

GRADE: K	SUBJECT: Math	STRAND: Geometry	MONTH(S) TAUGHT:

CODE: K.G.A.1	Description: Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.
	ACT/Anchor Standard: Look for and make use of structure
	Board Objective: I can find shapes around me. I can tell where shapes are. I can tell about and compare shapes.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Teacher gives a student a box and a puppet. Student demonstrates a positional word using the box and puppet. Teacher gives a student an object, and students identify the shape of the object. **Problem Task:** Students are given a sheet of paper with a table drawn on it. Teacher gives directions to draw balls in different colors using positional words (for example, "Draw a yellow ball under	Students locate and identify shapes in their environment. For example, a student may look at the tile pattern arrangement on the hall floor and say, "Look! I see squares! They are next to the triangle." At first students may use informal names e.g., "balls," "boxes," "cans". Eventually students refine their informal language by learning mathematical concepts and vocabulary and identify, compare, and sort shapes based on geometric attributes.* Students also use positional words (such as those italicized in the standard) to describe objects in the environment, developing their spatial reasoning competencies. Kindergarten students need numerous experiences identifying the location and position of actual two-and-three-dimensional objects in their classroom/school prior to describing location and position of two-and-three-dimension representations on paper. **Progressions for the CCSS in Mathematics: Geometry*, The Common Core Standards Writing Team, June 2012	Teacher holds up a shape and asks students if they can find an object in the environment that is similar in shape. "The (object shown) is a (name of shape)." Complete this activity with both 2-D and 3-D shapes. Teacher calls on a student to pick an object from the classroom to show to the class. Class names the shape of the object. Using a box and a puppet, the teacher models positional words by placing the box and puppet in different situations. Students then use boxes and puppets (or like materials) to model the positional words given by the teacher. Teacher will have a few students come up to the front of the classroom and act out positional words. Teacher can then call on other students to use positional words to describe the students' placement.

the table"; "Draw a blue ball next to the table").		

RESOURCES:	VOCABULARY:
Burns, Marilyn. *The Greedy Triangle (Scholastic Bookshelf).* Scholastic Paperbacks, 2008. Gowler Greene, Rhonda. *When a Line Bends... A Shape Begins.* Sandpiper, 2001. Hoban, Tana. *Cubes, Cones, Cylinders, and Spheres.* Greenwillow Books, 2000. Hoban, Tana. *Shapes, Shapes, Shapes.* Greenwillow Books, 1996. Pluckrose, Henry. *Shape (Mathcounts).* Children's Press, 1995. Stoll Walsh, Ellen. *Mouse Shapes.* Harcourt Children's Books, 2007. Objects from the environment that have distinct shapes.	above, below, under, on top, around, near, beside, in front of, behind, between, next to, square, circle, triangle, rectangle, hexagon, cube, cone, cylinder, sphere

ESSENTIAL QUESTIONS:
WHAT ARE PLANES? WHAT ARE SOLID OBJECTS?

GRADE: K	SUBJECT: Math	STRAND: Geometry	MONTH(S) TAUGHT:
CODE: K.G.A.2	Description: Correctly name shapes regardless of their orientations or overall size.		
	ACT/Anchor Standard: Look for and make use of structure		
	Board Objective: I can name shapes.		

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Show the students a set of shapes with different sizes and orientations. Ask them to name them. Ask the students to describe the attributes of specified two- or three-dimensional shape. "Describe a cone. Tell me the attributes of a triangle." **Problem Task:** Joey has a shape with 4 corners and 4 equal sides. What shape does he have? Explain your answer with a picture, with objects or in writing. Esperanza wants to wrap	Through numerous experiences exploring and discussing shapes, students begin to understand that certain attributes define what a shape is called (number of sides, number of angles, etc.) and that other attributes do not (color, size, orientation). As the teacher facilitates discussions about shapes ("Is it still a triangle if I turn it like this?"), children question what they "see" and begin to focus on the geometric attributes. Kindergarten students typically do not yet recognize triangles that are turned upside down as triangles, since they don't "look like" triangles. Students need ample experiences manipulating shapes and looking at shapes with various typical and atypical orientations. Through these experiences, students will begin to move beyond what a shape "looks like" to identifying particular geometric attributes that define a shape.	Show and Teach: Have the students bring an object that matches the shape you identify and describe the attributes. Feel and Tell: Students reach into a hiding box/bag/can. They describe the shape they feel. Other students guess what shape the student is describing. Sort and Name: Students work with partners as they sort and name a set of shapes. Cross-check with your partner. Acka Backa Soda Cracker: Use the chant and play the game. Students sit in a circle and pass various shapes around in rhythm with the chant. "Acka backa soda cracker, acka backa boo. Acka backa soda cracker, pass to you. Please name the shape that was passed to you!" String Shapes: Give the students a long piece of string and have the students work in small groups to create the shape you call. They stretch the

her teddy bear. Which shapes of wrapping paper could she use? Explain what shape you chose and why.		string to make circles, squares, etc. Students use geoboards to make the shapes.

RESOURCES:	VOCABULARY:
	flip, rotate, turn, triangle, square, circle, rectangle, hexagon, cone, cylinder, cube, sphere, attribute, large, small, medium, describe, facet (the flat side of a three-dimensional shape), vertices (where facets join)

ESSENTIAL QUESTIONS:
WHAT ARE PLANES? WHAT ARE SOLID OBJECTS?

GRADE: K	SUBJECT: Math	STRAND: Geometry	MONTH(S) TAUGHT:
CODE: K.G.A.3	Description: Identify shapes as two- dimensional (lying in a plane, "flat") or three dimensional ("solid").		
	ACT/Anchor Standard: Look for and make use of structure		
	Board Objective: I can name shapes.		

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Given a group of shapes, students can identify the flat and solid shapes. **Problem Task:** Given a shape, students can identify the shape as either flat or solid.	Students identify objects as flat (2 dimensional) or solid (3 dimensional). As the teacher embeds the vocabulary into students' exploration of various shapes, students use the terms two-dimensional and three-dimensional as they discuss the properties of various shapes.	Present the class with a set of solid and flat shapes. Ask the students to identify the name of each shape. Hold up all the flat shapes and ask students what they have in common. Hold up all the solid shapes and ask students what they have in common. Focus on the fact that solids have an extra dimension. Point to different shapes and have students identify the shape as either solid or flat. Have students come up to the front and pick a shape. Have the class identify it as either solid or flat. When mentioning flat and solid shapes, introduce the terms *two- dimensional* and *three-dimensional* to widen students'

		vocabulary. Note to teacher: When identifying an object as a shape, three- dimensional vocabulary should be used (for example, a ball is now a *sphere,* not a *circle*).

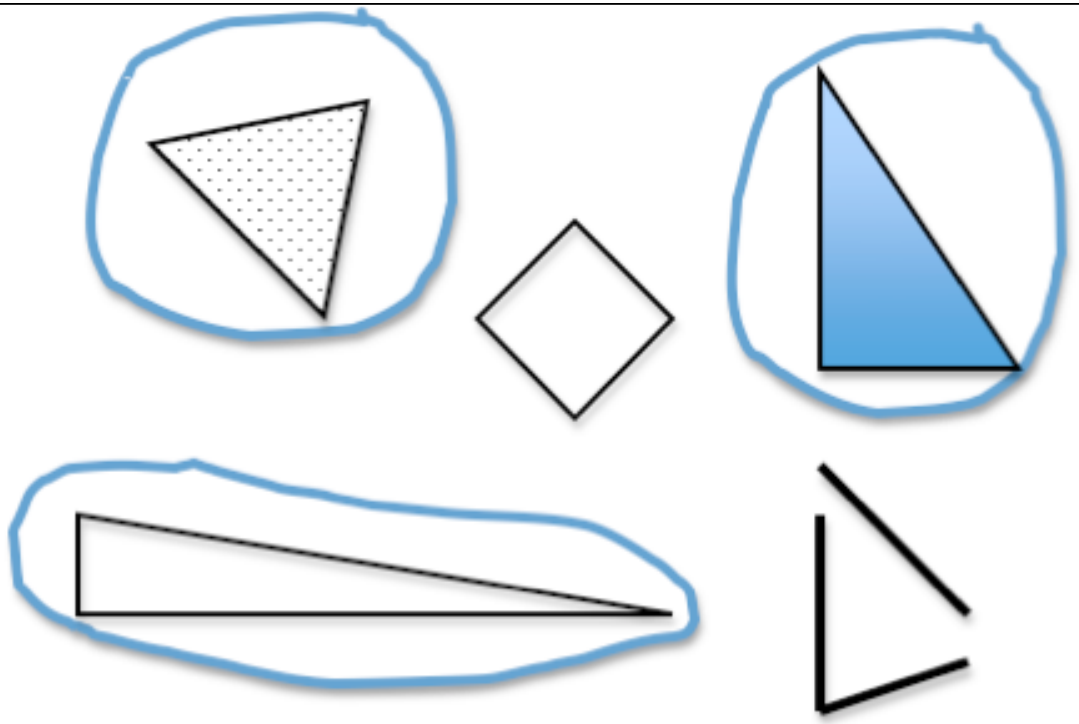
RESOURCES:	VOCABULARY:
Senisi, Ellen B. *A 3-D Birthday Party (Rookie Read-About-Math).* Children's Press, 2007. Thong, Roseanne. *Round Is a Mooncake: A Book of Shapes.* Chronicle Books, 2000. flat shapes (use paper models of shapes) solid shapes	flat, solid, two-dimensional, three-dimensional, squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, spheres

ESSENTIAL QUESTIONS:
HOW ARE PLANE AND SOLID OBJECTS DIFFERENT?

GRADE: K	SUBJECT: Math	STRAND: Geometry	MONTH(S) TAUGHT:

CODE: K.G.B.4	
	Description: Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
	ACT/Anchor Standard: Reason abstractly and quantitatively
	Board Objective: I can tell about and compare two-dimensional and three-dimensional shapes.

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** When presented with a variety of shapes, students can find common/different attributes, including dimensions. When given two shapes, students can indentify the similarities and differences of the two shapes. Students can count the number of corners, sides, etc., on a shape. **Problem Task:** Given a piece of paper with different shapes	Students relate one shape to another as they note similarities and differences between and among 2-D and 3-D shapes using informal language. For example, when comparing a triangle and a square, they note that they both are closed figures, have straight sides, but the triangle has 3 sides while the square has 4. Or, when building in the Block Center, they notice that the faces on the cube are all square shapes. Kindergarteners also distinguish between the most typical examples of a shape from obvious non-examples. For example: When identifying the triangles from a collection of shapes, a student circles all of the triangle examples from the non-examples.	Teacher should present two shapes to be compared and discussed. Students should describe both the similarities and the differences of the two shapes. The discussion should focus on size, orientation, parts, and other attributes that define shapes (not arbitrary attributes such as color, texture, etc.).

drawn on it, students can circle or color all examples of the same shape, regardless of size or orientation. When given a list of attributes describing a shape, students can point to the correct shape.		

RESOURCES:	VOCABULARY:
Burns, Marilyn. *The Greedy Triangle (Scholastic Bookshelf).* Scholastic Paperbacks, 2008. Murphy, Stuart J. *Captain Invincible and the Space Shapes (MathStart 2).* HarperCollins, 2001. shape manipulatives solid shapes flat shapes made of paper **NOTE:** It is important to begin to expose students to shapes in different orientations and sizes. Do not limit student experience to regular polygons (i.e., all sides and angles of equal measure).	compare, similarities, differences, size, orientation, attribute, part, side, point/corner/vertex, straight, round, curved, shape, square,

	circle, triangle, rectangle, hexagon, cube, cone, cylinder, sphere
ESSENTIAL QUESTIONS:	
HOW ARE PLANE AND SOLID OBJECTS DIFFERENT? HOW DO YOU DESCRIBE A 3-DIMENSIONAL SHAPE?	

GRADE: K	**SUBJECT: Math**	**STRAND: Geometry**	**MONTH(S) TAUGHT:**
CODE: K.G.B.5	Description: Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.		
	ACT/Anchor Standard: Model with mathematics		
	Board Objective: I can make shapes using materials like sticks and clay.		

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Skill-Based Task:** Teacher dictates a specific shape, and students draw the shape	Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	Students find objects in their classroom and name the objects' shapes (e.g., the globe is in the shape of a sphere, the tissue box is in the shape of a cube). Students match a given shape to an object in their

and its attributes correctly (students only need to draw two-dimensional shapes). **Problem Task:** Students choose a shape to model and use play dough to create it. Extend: Students choose a three-dimensional shape to create with play dough.		environment. When given a shape, students use that shape as the basis to draw an object found in their environment. Using linking cubes, students create a variety of shapes.

RESOURCES:	VOCABULARY:
Bryant, Megan E. *Shape Spotters (Penguin Young Readers, L2).* Penguin Young Readers, 2002. Fries, Marcia. *I See Shapes.* Creative Teaching, 1996. Hoban, Tana. *Shapes, Shapes, Shapes.* Greenwillow Books, 1996. Pluckrose, Henry. *Shape (Mathcounts).* Children's Press, 1995.	square, circle, triangle, rectangle, hexagon, cube, cone, cylinder, sphere, two-dimensional, three-dimensional, flat, solid sides, same, alike, different

ESSENTIAL QUESTIONS:
WHAT ARE SOLID OBJECTS?

GRADE: K	SUBJECT: Math	STRAND: Geometry	MONTH(S) TAUGHT:
CODE: K.G.B.6	Description: Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?"		
	ACT/Anchor Standard: Model with mathematics		
	Board Objective: I can use simple shapes to make larger shapes.		

ASSESSMENTS:	CONCEPT NOTES:	STRATEGIES
Teacher observation Checklists Drawings/ Illustrations **Problem Task:** Students are given a variety of materials (e.g.,	This standard moves beyond identifying and classifying simple shapes to manipulating two or more shapes to create a new shape. This concept begins to develop as students move, rotate, flip, and arrange puzzle pieces to complete a puzzle. Kindergarteners use their experiences with puzzles to use simple shapes to create different shapes. For example, when using basic shapes to create a picture, a student flips and turns triangles to make a rectangular house. Students also combine shapes to build pictures. They first use trial and error (part a) and	Teacher models how to compose simple shapes to form different or larger shapes by using attribute blocks, pattern blocks, etc. (e.g., two triangles combine to make a rectangle, four small squares combine to make a larger square).

attribute blocks, pipe cleaners, Popsicle sticks, shape cutouts) to use in composing the following shapes: square, rectangle, and triangle. Extension: hexagon, trapezoid, parallelogram and rhombus.	gradually consider components (part b)*.	Students will be given practice to compose simple shapes to form different or larger shapes through exploration using a variety of concrete shapes. Extension: Teacher models how to use attribute blocks to show composition of complex shapes (e.g., two trapezoids combine to make a hexagon, three parallelograms combine to make a hexagon).

RESOURCES:	VOCABULARY:
Gowler Greene, Rhonda. *When a Line Bends... A Shape Begins.* Sandpiper, 2001. Hoban, Tana. *Shapes, Shapes, Shapes.* Greenwillow Books, 1996. Pluckrose, Henry. *Shape (Mathcounts).* Children's Press, 1995. UEN Math website for grades K-2: http://www.uen.org/k-2interactives/math.shtml shape songs and poems	create, compose, explore, combine, different, larger, simple shape (e.g., square, rectangle, triangle)

ESSENTIAL QUESTIONS:
HOW ARE PLANE AND SOLID OBJECTS DIFFERENT? WHAT ARE SOLID OBJECTS?