ALIGNMENT OF MATH PERSPECTIVES RESOURCES WITH
COMMON CORE STATE STANDARDS IN MATHEMATICS

KINDERGARTEN		
COUNTING AND CARDINALITY	**ASSESSING MATH CONCEPTS**	**DEVELOPING NUMBER CONCEPTS**
Count to tell the number of objects •Understand the relationship between numbers and quantities, connect counting to cardinality. •When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. •Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. •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. Counting and producing sets of a given size.	**Assessment 1: Counting Objects** Task 1: Counting a Pile Task 2: Making a Pile	**DNC Book 1: Counting, Comparing, and Pattern** Children develop counting skills while learning about quantity and number relationships. Multiple and varied counting experiences that are needed to develop accuracy and consistency are provided. The size of numbers used will vary to meet the needs of each child.
Understand one more •Understand that each successive number name refers to a quantity that is one larger.	Task 3: One More/One Less (in sequence) Task 4: One More/One Less (not in sequence)	Children learn one more and one less through varied and on-going practice determining one more and one less. Size of numbers will vary according to the needs of the children.
Know number names and the count sequence (to 20) **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).	**Assessing at Work Task:** Counting Collections	Children learn to read and write numerals in order to represent quantities and to record experiences with numbers.
Count on Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	**Assessment 2: Changing Numbers**	Children learn to count on and back through experiences adding to and taking away from numbers.
Compare numbers 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. Compare two numbers between 1 and 10 presented as written numerals.	**Assessment 3: More/Less Trains**	Children develop a sense of quantities and relationships by measuring and comparing a variety of shapes, lines, containers, and other groups to determine which group of objects is or less than another. They describe and record these relationships in a variety of ways using words and symbols.
Know number names and the count sequence (to 100) Count to 100 by tens	**Assessment 1: Counting Objects** Ext. One More/One Less to 100	Children count and keep track of days of school using ten frames and a number line.

OPERATIONS AND ALGEBRAIC THINKING	ASSESSING MATH CONCEPTS	DEVELOPING NUMBER CONCEPTS
Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. Solve addition and subtraction word problems, and add and subtract within 10, e.g. by using objects or drawings to represent the problem.	**DNC: Chapter 2: Chapter 1** Guide to Observation p.3	**DNC: Book 2: Addition and Subtraction Chapter 1: The Processes of Addition and Subtraction** Children make connections between the real world and the operations of addition and subtraction by interpreting and solving addition and subtraction word problems and symbolic problems and by creating story problems to go with equations.
Compose and decompose numbers Quickly recognize the cardinalities of small sets of objects (summary). 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).	**Assessment 4: Number Arrangements**	**DNC: Book 2: Addition and Subtraction Chapter 2: Number Combinations** Children learn to recognize groups of numbers to 5 in a variety of configurations and to recognize and describe the smaller parts contained in the larger numbers. They combine parts by identifying one part and counting the rest (counting on). They explore the number of ways a number can be broken up.
Fluently add and subtract within 5.	**Assessment 5: Combination Trains** **Assessment 6: Hiding Assessment**	**DNC: Book 2: Addition and Subtraction Chapter 1, 2 and 3.** The children are provided with varied and ongoing experiences combining and breaking up numbers.
NUMBER AND OPERATIONS IN BASE TEN		
Work with numbers from 11-19 to gain foundations for place value 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 (such as 18=10+8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	**Assessment 7: Ten Frames**	**DNC: Book 2: Chapter 1: The Processes of Addition and Subtraction** Children interpret plus and minus signs while adding on or taking from ten frames and working space papers with 10 dots. **DNC: Book 2: Addition and Subtraction Chapter 3: Number Combinations to 20** Children work to make ten and some more using ten frames and describe what they see.

Math Perspectives
Teacher Development Center

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FIRST GRADE		
Standards printed in green need to be achieved before moving on to more complex standards.		
OPERATIONS AND ALGEBRAIC THINKING	**ASSESSING MATH CONCEPTS**	**DEVELOPING NUMBER CONCEPTS**
Represent and solve problems involving addition and subtraction **Solve addition and subtraction word problems, and add and subtract *within 10*, e.g. by using objects or drawings to represent the problem.*** Use addition and subtraction *within 20* to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	**DNC: Chapter 2: Chapter 1** Guide to Observation p.3	**DNC: Book 2: Addition and Subtraction Chapter 1: The Processes of Addition and Subtraction** Children make connections between the real world and the operations of addition and subtraction by interpreting and solving addition and subtraction word problems and symbolic problems and by creating story problems to go with equations. Children work with word problems that present situations of adding to, taking from, putting together, taking apart, comparing, equalizing, and missing addends and record using equations.
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 strategies for adding and subtracting whole numbers based on their prior work with small numbers.	**Assessment 4:** **Number Arrangements**	**DNC: Book 2: Addition and Subtraction Chapter 2: Number Combinations to 10 Chapter 3: Developing Strategies** Children create arrangements and describe parts using words and symbols. They learn to combine and take away the parts of numbers without the need to count.
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. * Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.	**Assessment 6:** **Hiding Assessment**	**DNC: Book 2:** **Chapter 2: Number Combinations to 10** Children learn the parts of numbers so well that they can tell the missing part of a number without counting.

Understand and apply properties of operations and the relationship between addition and subtraction Apply properties of operations as strategies to add and subtract. *Examples: If 8+3=11 is known, then 3+8=11 is also known.* (Commutative property of addition.) *To add 2+6+4, the second two numbers can be added to make a ten, so 2+6+4=12.* (Associative Property of addition.)	**Assessment 5: Combination Trains**	**DNC: Book 2: Chapter 2: Number Combinations to 10 Chapter 3: Number Combinations to 20** Children practice applying their knowledge of parts of numbers to 10 to add and subtract from numbers up to 20. They look for relationships between problems to help them solve unknown problems.
Add and subtract within 20 Fluently add and subtract within 5.* Relate counting to addition and subtraction (counting on 2) Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on, making ten (e.g., 8+6=8+2+4); decomposing a number leading to a ten (e.g., 13-4=13-3-1); using the relationship between addition and subtraction and creating equivalent but easier or known sums (e.g., 6+6=12 so 6+7 is one more, 13).	**Assessment 5: Combination Trains** **Assessment 6: Hiding Assessment** **Assessment 7: Ten Frames**	**DNC Book 2: Chapter 3 Developing Strategies** Children use more and more sophisticated strategies as they learn parts of numbers and relationships between numbers including: Counting on Making tens Using known combinations to determine unknown combinations To knowing without counting
Work with addition and subtraction equations Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6=6, 7=8-1, 5+2=2+5, 4+1=5+2.* Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 +? = 11, 5 = – 3, 6 + 6 = .*	**DNC: Chapter 2: Chapter 1** Guide to Observation p.3	**Chapter 1: Processes of Addition and Subtraction** Children learn to record equations that describe the word problems they are interpreting.

NUMBER AND OPERATIONS IN BASE TEN	Assessing Math Concepts	Developing Number Concepts
Extend the counting sequence Count to120, starting at any number less than 120 in this range, read and write numerals and represent a number of objects with a written numeral.	**DNC Book 3 Chapter 1:** Observation Sheet p. 8	**Book 3 Place Value, Multiplication and Division** **Chapter 1:Section A: Understanding Regrouping-the Process and the Patterns** The children create and record the patterns that emerge as they form groups of tens and ones. They learn the counting patterns in a way that brings meaning to these large numbers.
Understand place value Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: •10 can be thought of as a bundle of ten ones - called a "ten." The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. •The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three four, five, six, seven, eight, or nine tens (and 0 ones.) Compare two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols › , =, and ‹.	**Assessment 7: Ten Frames** **Assessment 8: Grouping Tens**	**Book 2: Addition and Subtraction** **Chapter 3: Number Combinations to 20** The children use ten frames to organize numbers into a ten and leftovers. They use this structure to add and subtract within these numbers. **Book 3: Chapter 1:Section B** **Developing a Sense of Quantities to 100 and Beyond** The children learn the structure of numbers to 100 as tens and ones by measuring and organizing groups into tens and leftovers. They count and compare groups of tens and ones and gain an understanding of place value through many varied experiences.

Uses place value understanding and properties of operations to add and subtract Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones, and sometimes it is necessary to compose a ten. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	**Assessment 8:** **Grouping Tens** **Assessment 9.Two-Digit Addition and Subtraction**	**DNC: Book 3 Chapter One: Section 3:** **Addition and Subtraction of Two-Digit Numbers.** The children use models of tens and ones to add and subtract. They add, subtract, and compare in ways that make sense to them. They explain their strategy orally and in writing and record the resulting equations.

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SECOND GRADE		
Standards printed in green need to be achieved before moving on to more complex standards.		
OPERATIONS AND ALGEBRAIC THINKING	**Assessing Math Concepts**	**Developing Number Concepts**
Add and subtract within 20 **Solve addition and subtraction word problems, and add and subtract *within 10*, e.g. by using objects or drawings to represent the problem.*** **Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on, making ten (e.g., 8+6=8+2+4); decomposing a number leading to a ten (e.g., 13-4=13-3-1); using the relationship between addition and subtraction and creating equivalent but easier or known sums (e.g., 6+6=12 so 6+7 is one more, 13).** Fluently add and subtract 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	**Assessment 5: Combination Trains** **Assessment 6: Hiding Assessment** **Assessment 7: Ten Frames**	*DNC: Book 2: Addition and Subtraction* **Chapter 2: Number Combinations to 10** **Chapter 3: Number Combinations to 20** Children compose and decompose numbers until they learn parts of numbers and relationships between numbers. *DNC Book 2: Addition and Subtraction* **Chapter 3:** Developing Strategies Children practice applying their knowledge of parts of numbers to 10 to add and subtract from numbers up to 20. They look for relationships between problems to help them solve unknown problems. They use more and more sophisticated strategies including counting on, making tens, using known combinations to determine unknown combinations until they can add and subtract from memory.
Represent and solve problems involving addition and subtraction Use addition and subtraction within 100 to solve one and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings, and equations with a symbol for the unknown number to represent the problem.	DNC Book 3 Observation Sheet p 102	*DNC Book 3: Place Value, Multiplication and Division* **Chapter 1: Section C: Adding and Subtracting Two Digit Numbers** The children interpret word problems using models for tens and ones if needed.
Work with equal groups of objects to gain foundations for multiplication Determine whether a group of objects (up to 20) has an odd or even number of members, *e.g., by pairing objects or counting them by 2's, write an equation to express an even number as a sum of two equal addends.* Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	DNC Book 3 Observation Sheet p 137	*DNC Book 3: Place Value, Multiplication and Division* **Chapter 3: Division** Children determine which numbers are odd and which are even and record the patterns that emerge**.** *DNC Book 3:* **Chapter 2: Multiplication** *Children work with equal groups and arrays in a variety of situations.*

NUMBER AND OPERATIONS IN BASE TEN	Assessing Math Concepts	Developing Number Concepts
Understand Place Value		
Understand that the two digits of a two-digit number represent amounts of tens and ones. **•The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three four, five, six, seven, eight, or nine tens (and 0 ones.)** **•Compare two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols ›, =, and ‹.**	**Assessment 8: Grouping Tens**	**DNC Book 3: Chapter 1:Section B Developing a Sense of Quantities to 100 and Beyond** The children learn the structure of numbers to 100 as tens and ones by organizing groups into tens and leftovers. They count and compare groups of tens and ones and gain an understanding of place value through many varied experiences.
Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones, *e.g., 706 equals 7 hundreds, 9 tens and 6 ones.* Understand the following as special cases: •100 can be thought of as a bundle of ten tens - called a "hundred". •The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900, refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	**Assessment 12: Grouping 100s**	**DNC: Book 3: Chapter 1:Section A: Understanding Regrouping- the Process and the Patterns** The children create and record the patterns that emerge as they form groups of hundreds, tens and ones, reorganizing groups of tens into hundreds. They learn the counting patterns in a way that brings meaning to these large numbers. **Understanding Numbers Series: Place Value** The children learn to understand the structure of the base-ten number system by determining the total value of numbers by reorganizing various groups of hundreds, tens and ones.
Count within 1000, skip-count by 5's, 10's, and 100's.	**DNC Book 3** **Observation Sheet p. 8**	**DNC: Book 3: Chapter 1:Section A: Understanding Regrouping- the Process and the Patterns** The children create and record the patterns that emerge when skip-counting by various numbers while regrouping quantities into hundreds, tens and ones.
Read and write numerals to 1000 using base-ten numerals, number names, and expanded form.		**Understanding Numbers Series: Place Value** The children engage in a variety of experiences working with numbers to 1000 and record their results using numerals.
Compare two three-digit numbers based on meanings of the hundreds, tens and digits using <, =, > symbols to record the results of the comparisons.		**Understanding Numbers Series: Place Value** The children determine and then compare quantities in a variety of situations.

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Use place value understanding and properties of operations to add and subtract.		
Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones, and sometimes it is necessary to compose a ten. **Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.** **Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. Add up to four two-digit numbers using strategies based on place value and properties of operations.	**Assessment 8: Grouping Tens** **Assessment 9: Two-Digit Addition and Subtraction** **Assessment 10: Hiding Assessment in Base Ten**	**DNC: Book 3 Chapter 1: Section 3: Addition and Subtraction of Two-Digit Numbers** The children use models of tens and ones to add and subtract. They add, subtract, and compare in ways that make sense to them. They explain their strategy orally and in writing and record the resulting equations. **Understanding Numbers Series: Addition and Subtraction** **Level 1: Working with Tens and Ones**
Add and subtract within 1000 using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens, and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900. Explain why addition and subtraction strategies work, using place value and the properties of operations.	**Assessment 11: One Hundred and Some More** **Assessment 12: Extension: Grouping 1000s**	**Understanding Numbers Series: Addition and Subtraction** **Level 2: Working with Hundreds, Tens and Ones** The children use models of hundreds, tens, and ones to add and subtract in a variety of situations and explain how they arrived at their answers.