

Number Sense Matrix (The conceptual framework for the Augustana/Longfellow Number Sense Project)

Age Target	Learning Goal <i>Gleaned from Fuson et al. (2001), Van de Walle (2004) and Richardson (2003)</i>	Richardson Assessment <i>CN = Concept N SI = Student Interview Assessment AW = At Work Assessment</i>	Software Activity	Other Activity	Trailblazers Link <i>Math Trailblazers, © 2008 by Kendall/Hunt Publishing Company, Dubuque, IA (the math curriculum used in the Longfellow Kindergarten)</i>
Pre-K	Count to 10 Orally (by rote)		Count Sort		Numbers Around Us (August) We All Count! (September)
	Count Objects and Recognize Cardinality (up to 10 objects)	C1: Counting Objects SI C1: Counting Objects AW	Count Sort Ah Chute		Numbers Around Us (August) We All Count! (September) Pennies and Things (October) Counting Connections Activities (Year Round)
	Recognize Basic Numerical Relationships Between 5 and 10 (e.g. “7 can be thought of as 5 plus some more”)	C2: Changing Numbers SI C2: Changing Numbers AW	Ah Chute Pattern Sets		Number Comparisons (December) Dominoes and Number Cubes (January) Looking at the Number 10 (February) Partitioning 7, 8, 9 (February) Calendar Work-10 Frame (All Year)
	Relate Words, Numerals, and Physical Referents to 10 (e.g., be able to translate among the picture “* * *”, the oral word “three,” and the symbol “3”)	C1: Counting Objects AW C2: Changing Numbers SI	Count Sort Pattern Sets		We All Count! (September) Number Dot Patterns (October) Dominoes and Number Cubes (January) Looking at the Number 10 (February) Counting Connections Activities (Year Round)
Kindergarten	Be Able to “Break Apart Numbers” Up to 10 (e.g., recognize that a collection of 9 can be broken down into a collection of 5 and a collection of 4; or different smaller collections such as “2,” “3” and “4”... “Doubles” are a special subset which warrant attention... e.g., 8 is 4 and 4, 7 is one more than 3 and 3.)	C4: Identifying and Counting Parts SI C4: Identifying and Counting Parts AW C6: Hiding Assessment SI C6: Hiding Assessment AW	Count Sort Ah Chute Pattern Sets Balance Math What’s Hiding?		Number Dot Patterns (October) Looking at the Number 5 (November) Dominoes and Number Cubes (January) Looking at the Number 10 (February) Partitioning 7, 8, 9 (February) Partitioning 10 (March) Calendar Work-10 Frame (All Year)
	Write Numerals to 10	C1: Counting Objects AW			
	View Teen Numbers as One Group of Ten and Some Loose Ones		Pattern Sets Base Ten Blocks	Base Ten Blocks DigiBlocks	Calendar Work-10 Frame (All Year)
	Count a Disorganized Collection of Objects to 32	C1: Counting Objects SI C1: Counting Objects AW	Count Sort		Counting Connections Activities (Year Round)
	Begin a Basic “Counting On” Strategy for Addition	C2: Changing Numbers SI C2: Changing Numbers AW		10 Path	
	Efficiently Recognize Numbers Which are “One More/Two More” and “One Less/Two	C1: Counting Objects SI <i>“one more/one less only”</i> C1: Counting Objects AW <i>“one more/one less only”</i>	Pattern Sets		One More/One Less (May)

	Less” Than a Given Number				
	Master Number “Families” (especially 5 and 10) (e.g., know all of the 5 families, 0+5, 1+4, 2+3; all the 10 families; recognize facts such as “3 is 2 less than 5,” “7 is 2 more than 5”; “7 is also 3 less than 10.”	C2: Changing Numbers SI C2: Changing Numbers AW C4: Identifying and Counting Parts SI C4: Identifying and Counting Parts AW C6: Hiding Assessment SI C6: Hiding Assessment AW	Count Sort Ah Chute Balance Me What’s Hiding? Pattern Sets		Number Dot Patterns (October) Pennies and Things (October) Looking at the Number 5 (November) Dominoes and Number Cubes (January) Looking at the Number 10 (February) Partitioning 7, 8, 9 (February) Partitioning 10 (March) Calendar Work-10 Frame (All Year)
Post-K	View Numbers Larger than 19 as Collections of Tens and Ones		Base Ten Blocks	Base Ten Blocks DigiBlocks	
	Relate Words, Numerals, and Pictures for Numbers Greater Than 19 Flexibly (e.g., recognize “24” represented with base ten blocks as two longs and four cubes, recognize that the symbol “24” means “two tens and four ones” and also can mean “twenty-four ones”, recognize that 24 can mean 20+4)		Base Ten Blocks	Base Ten Blocks DigiBlocks	
	Knows and Applies Basic Addition Facts (e.g., doesn’t need to “count on”...quickly recalls that $5 + 3 = 8$, for example)	C2: Changing Numbers SI C2: Changing Numbers AW C4: Identifying and Counting Parts SI C4: Identifying and Counting Parts AW	Word Problems		Problem Solving in the Kindergarten Day (Year Round)
	Can Subtract [with a developmental progression of counting backward and eventually applying number relationships (e.g., if the 8, 2, 10 “family” is known, uses this family) and memorized facts]	C2: Changing Numbers SI C2: Changing Numbers AW C6: Hiding Assessment SI C6: Hiding Assessment AW	Word Problems What’s Hiding?		Calendar Work-10 Frame (All Year)
	More Advanced “Counting On” Strategy with the Hundreds Chart (e.g., begin to add $24 + 13$ by quickly adding “10” and then 3 more)				

REFERENCES

- Fuson, K. C., Grandau, L., & Sugiyama, P. A. (2001). Achievable numerical understandings for all young children. *Teaching Children Mathematics*, 7, 522-526.
- Richardson, K. (2003). *Assessing math concepts*. Bellingham, WA: Math Perspectives.
- Van de Walle, J. A. (2004). *Elementary and middle school mathematics: Teaching developmentally* (Fifth ed.). Boston: Pearson Education, Inc.