The Mathematics Curriculum: Scope and Sequence

Our mathematics program is based on *Focal Points* from the National Council of Teachers of Mathematics. It is implemented through the use of many different published materials (such as *Math in Focus*, *Investigations,* and *Interactive Mathematics Program*), teacher-created materials, games, and projects. In keeping with the recommendations from NCTM, we constantly strive to provide "contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations." In the tables below, there are indicated points at which we expect typical students to have the skill or concept introduced (B), developed (D), and secure (S).

NUMBER AND OPERATIONS	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Whole numbers: correspondence, counting, cardinality	B	D	S					
Representing, comparing, and ordering whole numbers		B	S					
Join and separate sets of objects, count sets, count backward		B	S					
Addition and subtraction concepts: with objects, number lines	B	D	S					
Whole number relationships, grouping in tens and ones		B	S					
Base-ten number system, place value concepts for whole numbers		B	D	D	D	D	S	
Compose and decompose multi-digit numbers, expanded notation			B	D	D	D	S	
Understand multiplication as repeated addition			B	D	S			
Quick recall of addition and subtraction facts				B	S			
Fluency with multi-digit addition and subtraction				B	D	S		
Understand multiplication and division concepts, strategies				B	D	S		
Understand fraction concepts and fraction equivalencies				B	D	D	D	S
Quick recall of multiplication and division facts					B	D	D	S
Fluency with whole-number multiplication, efficient algorithm					B	D	S	
Decimal concepts, connection between decimals and common fractions						B	D	S
Estimation and rounding with whole numbers					B	D	S	
Understanding of and fluency with division of whole numbers						B	D	S
Understanding of and fluency with addition and subtraction of fractions and							B	S

decimals								
Understanding of integers, context for negative numbers						B	D	S
Understanding of and fluency with multiplication and division of fractions and decimals; fractions as a division statement							B	D
Connect ratio and rate to multiplication and division							B	D

ALGEBRA	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Sequential patterns: recognize, explain, extend, create with increasing complexity and varied contexts	B	D	D	D	D	D	D	D
Identify and apply number patterns and properties, develop rules and strategies for basic computation facts			B	D	D	S		
Skip-counting leads to fluency, understanding of multiples and factors			B	D	D	D	S	
Relationships between multiplication and division, functions					B	D	D	S
Use of patterns, models, relationships to create, solve equations and inequalities							B	D
Graph simple equations							B	D
Understand and use prime and composite numbers, prime factorization							B	D
Understand and apply order of operations							B	S
Represent and solve linear equations							B	D
Understand, develop, and apply formulas							B	D

DATA ANALYSIS	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Describe, sort, compare objects by attributes	B	S						
Collect, analyze, and represent data with pictures, graphs, frequency tables, line plots, stem and leaf plots		B	D	D	D	D	D	D
Use ordered pairs on coordinate grids						B	D	S
Analyze and represent data in terms of mean, median, mode						B	D	S
Describe data in terms of percentages							B	D
Use proportions to make estimates based on samples							B	D
Understand and recognize bias and inaccuracy in data collection and representation							B	D

GEOMETRY	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Identify shapes and describe spatial relationships in 2 and 3 dimensions	B	D	D	D	D	D	D	S

Understand and use vocabulary to describe objects in space and follow navigational directions	B	D	D	D	D	S		
Describe and analyze properties of geometric shapes in 2 and 3 dimensions	B	D	D	D	D	D	D	D
Composing and decomposing geometric shapes		B	D	D	D	D	D	D
Explore and understand symmetry, congruence, and similarity					B	D	D	S
Explore and understand area and perimeter					B	D	S	
Explore and understand tiling, transformation, and tessellation							B	D
Analyze 3D shapes in terms of volume and surface area, other properties						B	D	S
Understand relationships and patterns among faces, edges, and vertices for 3D shapes							B	D
Discover and justify formulas for areas and volume of polygons and solids							B	D

MEASUREMENT	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Identify measurable attributes: same, different, more, less (length, weight)	B	S						
Solve problems using measurement in units, number lines		B	D	D	D	S		
Develop understanding of measurement in linear units, relationships			B	D	S			
Work with fractional units of measure, perimeter, appropriate units					B	D	S	
Develop understanding of area and finding area of 2D shapes						B	D	S
Develop understanding of volume, find surface area and volume of prisms							B	D
Find and justify relationships of areas of 3D shapes, derive formulae							B	D
Find dimensions from surface area and volume, also the reverse							B	D

PROBABILITY	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Develop understanding of geometric probability through spinners, etc.						B	D	S
Express probability as fractions, ratios, proportions, percentages							B	D
Understand permutations and combinations							B	D
Understand independence of outcomes in repeated actions (e.g., coin toss)							B	D
Understand concepts of theoretical and experimental probability								B
Design “fair” games and probability experiments							B	D

Language Arts Scope and Sequence

Our language arts program is aligned with the NCTE recommendations for elementary language arts instruction (http://www.ncte.org). Our program is implemented through the use of many different published teacher resources (such as *Handwriting without Tears, Fundations,* and *Sitton Spelling*) as well as teacher-created materials. The program is grounded in children's literature but is also rich in experiences with non-fiction and informational resources. In the table below, we have indicated points at which we expect typical students to have the skill or concept introduced (B), developed (D), and secure (S).

RECEPTIVE LANGUAGE	N	K	1	2	3	4	5	6
Listens while others speak	D	S						
Listens attentively to stories	D	S						
Follows oral directions independently	D	D	D	S				
Exhibits appropriate listening behavior while others are speaking or reading a book, including maintaining eye contact, being quiet, being attentive, and sitting still.	D	S						
Understands and answers questions posed by adults and peers.	D	D	D	S				

EXPRESSIVE LANGUAGE	N	K	1	2	3	4	5	6
Speaks clearly	D	D	D	S				
Speaks in confident voice which can be heard	D	D	D	S	D			
Expresses ideas clearly	D	D	D	D	D	D	D	D
Formulates and asks questions	D	D	D	D	D	D	D	D
Contributes to classroom discussions	B	D	D	D	D	D	D	D
Speaks comfortably and fluently in front of the group	B	D	D	D	D	D	D	D
Speaks clearly and with appropriate expression	D	D	D	D	D	D	D	D

CONCEPTS ABOUT PRINT	N	K	1	2	3	4	5	6
Identifies front/back of book	B	S						
Left to right/top to bottom reading	B	S						
Recognizes capital vs. lowercase letters	B	S						
Recognizes a word as group of letters	B	S						
Identifies first/last letter in a word	B	S						
Recognizes punctuation (period, comma, quotation mark)		B	S					

PHONEMIC AWARENESS	N	K	1	2	3	4	5	6
Recognizes rhyming words	B	S						
Given a spoken word, can produce rhyming word	B	S						
Counts number of syllables in words	B	D	S					
Counts number of sounds in a word	B	D	S					

Understands that sequence of letters in written word = sequence of sounds in a spoken word	B	S						
Matches like sounds in words – beginning & end	B	S						
Blends component sounds into words	B	D	S					
Uses onset-rime to identify new words			B	S				

SIGHT WORD VOCABULARY	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Recognizes own name	S							
Recognizes names of classmates	B	S						
Environmental print: knows where to find a word in the classroom environment		B	D	S				
High frequency words - First 200			S					
High frequency words – 300				S				
High frequency words – 500					S			

WORD STUDY (phonics, spelling, decoding)	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Recognizes letters of the alphabet (upper & lower case)	B	S						
Sound-symbol	B	D	S					
Identifies beginning sound of a word	B	S						
Spells high frequency words 1-25 (posted in the classroom)		B	S					
Acquires spelling skill according to goals of spelling program (Sitton, etc.)				D	D	D	D	D
Uses multiple strategies for spelling			B	D	D			
Acquires phonics skills according to goals of word study program (Fundations, etc.)			B	D	D			
Uses multiple strategies to decode words		B	D	D	S			

COMPREHENSION **(note: N/ K = listening comprehension)**	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Enjoys read-aloud and engages in conversation about text	B	D	D	D	S			
Retells story in sequential order from beginning to end	B	D	D	D	S			
Reads aloud fluently and with expression			B	D	D	D	D	D
Recognizes errors while reading and self-corrects			B	D	S			
Selects “just right” books			B	D	S			
Recalls & retains details and facts	B	D	D	D	D	D	D	D
Extracts information from non-fiction texts			B	D	D	D	D	D
Makes predictions	B	D	D	D	D	D	D	D
Makes inferences	B	D	D	D	D	D	D	D
Identifies main idea		B	D	D	S			
Summarizes				B	D	S		
Compares & contrasts		B	D	D	D	D	D	D
Sees cause & effect relationships			B	D	D	D	D	S
Recognizes conflict/story problem & resolution					B	D	D	D
Understands character traits			B	D	D	S		
Determines setting				B	D	S		
Uses evidence from the text to support thinking			B	D	D	D	D	D
Develops thinking through writing about reading			B	D	D	D	D	D
Understands & creates outlines					B	D	D	D
Understands literary genres				B	D	D	S	

Uses index, glossary, table of contents			B	D	D	D	S	
Alphabetizes			B	D	S			
Reads maps				B	D	D	S	
Reads charts		B	D	D	D	S		
Uses reference materials on internet and from library					B	D	D	D
Vocabulary	D	D	D	D	D	D	D	D
Understands figurative language, similes, metaphors, etc.				B	D	D	D	S

WRITTEN EXPRESSION	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Dictates or writes familiar words, phrases or a single sentence on one topic	B	S						
Tells a story about a drawing with little or no teacher support	B	S						
Picture and dictation match	B	S						
Uses known letters and approximations of letters to represent written language	B	D	S					
Can read back some of dictation, or own writing, while touching the words	B	D	S					
Writes left to right	B	S						
Spells some high frequency words correctly or accesses environmental print	B	S						
Leaves spaces between most words		B	S					
Prints legibly	B	D	D	S				
Uses correct cursive form					B	S		
Writes independently		B	S					
Writes using initial consonant for each word		B	S					
Spells grade level words correctly			B	D	D	D	D	D
Writes 2 to 3 readable sentences		B	S					
Writes a story w/a beginning, middle & end		B	D	D	D	S		
Orders ideas logically				B	D	D	S	
Writes an indented paragraph w/a topic sentence and all sentences related					B	D	S	
Edits work for spelling, punctuation & grammar			B	D	D	D	D	D
Revises work for clarity, content & organization				B	D	D	D	D
Uses appropriate formatting (margins, headings, salutations, etc.)			B	D	D	S		

KEYBOARDING	**N**	**K**	**1**	**2**	**3**	**4**	**5**	**6**
Knows and uses 2 hemispheres of the keyboard with appropriate hands				B	D	S		
Touch-typing proficiency (35 wpm)					B	D	D	S