Kindergarten Mathematics - Elmbrook School District

Curriculum Area: Mathematics	Grade Level: Kindergarten
Date last reviewed: December 9, 2015	Board approval date: February 3, 2016

Desired Results:

Course Description and Purpose: This framework for improving student learning focuses on high-quality math standards. It provides teachers with a clear set of math concepts and skills for students to understand and be able to due by the end of the school year.

Enduring Understanding:	Essential Questions:
Counting and Cardinality • There are many ways to represent a number.	**Counting and Cardinality** • How do I determine the best numerical representation (pictorial, symbolic, objects) for a given situation?
Operations and Algebraic Thinking • Operations create relationships between numbers. • The relationships among the operations and their properties promote computational fluency.	**Operations and Algebraic Thinking** • Why do I need mathematical operations? • How do mathematical operations relate to each other? • How do I know which mathematical operations (+,-) to use?
Numbers and Operations in Base Ten • Our number system is based on groups of ten. • Number sense develops through experience.	**Numbers and Operations in Base Ten** • What kinds of experiences help develop number sense?
Measurement and Data • Measurement describes the attributes of objects and events.	**Measurement and Data** • Why do I measure? • Why do I need standardized units of measurement?

• Standard units of measure enable people to interpret results or data. • All measurements have some degree of uncertainty. **Geometry** • Geometry and spatial sense offer ways to interpret and reflect on our physical environment. • Analyzing geometric relationships develops reasoning skills.	• How exact does a measurement have to be? **Geometry** • In what ways can geometric models describe spatial relationships? • How can geometric shapes and objects classified?

Assessment Evidence:

Formative Assessments:	Summative Assessments:
Elmbrook Math Profile Observation/Anecdotal Notes Checklists	Elmbrook Math Profile Math MAP Assessment Number Knowledge Assessments

Instructional Outline:

Mathematical Practice Standards
1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.

Counting and Cardinality (CC)		
Know number names and the count sequence (K.CC.1-3)		
Standards:	**I Can Statements:**	**Essential Elements:**
CC.1. Count to 100 by ones and tens	I can count to 100 by ones and by tens.	**EE.K.CC.1.** Starting with one, count to 10 by ones.
CC.2 Count forward beginning from a given number within the known sequence.	I can count forward beginning from a given number within the known sequence (not to begin at 1).	Not applicable. See **EE.2.NBT.2.b.**
CC.3 Write numbers from zero to 20.	I can write numbers from 0-20.	Not applicable. See **EE.2.NBT.3.**
CC.3 Represent a number of objects with a numeral 0 to 20.	I can represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	
Count to tell the number of objects (K.CC.4-5)		
Standards:	**I Can Statements:**	**Essential Elements:**
CC.4a Count objects in standard order pairing each object with one number name (1:1 correspondence)	I can count objects aloud, pairing each object with the numeral.	**EE.K.CC.4.** Demonstrate one-- to-- one correspondence, pairing each object with one and only one number and each number with one and only one object.
CC.4.b Understand that the last number name said tells the number of objects counted.	I can demonstrate my understanding that the last number name that I say when counting a group of objects tells me how many total objects I have.	

CC.4.b Understand the number of objects in a set remains the same regardless of their arrangement or order.	I can explain why a number of objects remains the same regardless of the arrangement.	
CC.4.c Understand that each successive number name refers to a quantity that is one larger.	I can show my understanding that each number I count is one more than the previous number.	
CC.5 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.	I can count to answer "how many?" questions for up to 20 objects arranged in many ways (in a line, in a rectangular array, in a circle, in a scattered configuration).	**EE.K.CC.5.** Count out up to three objects from a larger set, pairing each object with one and only one number name to tell how many.
CC.5 Given a number from 1-20, count out that many objects.	I can count out a given number (0-20) of objects.	
Compare numbers (K.CC.6-7)		
Standards:	**I Can Statements:**	**Essential Elements:**
CC.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group.	I can identify the number of objects in one group is greater than, less than, or equal to the number of objects in another group. I can describe the results.	**EE.K.CC.6** Identify whether the number of objects in one group is more or less than (when the quantities are clearly different) or equal to the number of objects in another group.
CC.7 Compare two numbers between 1 and 10 presented as written numerals.	I can compare two numbers between 1-10 presented as written numerals. I can describe the results.	Not applicable. See **EE.2.NBT.4.**
Operations and Algebraic Thinking (OA)		

Understand addition as putting together and adding to and understand subtraction as taking apart and taking from (OA.1-5)		
Standards:	**I Can Statements:**	**Essential Elements:**
OA.1. Represent addition with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions or equations	I can show my understanding of addition with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations.	**EE.K.OA.1** Represent addition as "putting together" or subtraction as "taking from" in everyday activities.
OA.1 Represent subtraction with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions or equations	I can show my understanding of subtraction with objects, fingers, mental images,	Not applicable See **EE.2.NBT.6-7.**
OA.2 Solve addition word problems, and add within 10 by using objects or drawings to represent the problem	I can add within 10 using objects or drawings to represent the problem.	
OA.2 Solve subtraction word problems, and subtract within 10 by using objects or drawings to represent the problem	I can subtract within 10 using objects or drawings to represent the problem.	
OA.3 Decompose numbers less than or equal to 10 into pairs (two groups) in more than one way by using objects or drawings	I can decompose numbers less than or equal to 10 into pairs in more than one way.	Not applicable. See **EE.1.NBT.6.**
OA.3 Decompose numbers less than or equal to 10 and record each decomposition by a drawing or equation	I can decompose numbers less than or equal to 10 and record each decomposition by a drawing or equation.	

0A.4 Find the numbers that make 10 when added to a given number 1-9	I can find the number that makes 10 when added to a given number 1-9.	Not applicable. See **EE.1.NBT.2.**
0A.4 Find the number that makes 10 when added to a given number 1-9 and record the answer with a drawing or an equation	I can find the complements of 10 using objects, pictures, and number models.	
0A.5 Add fluently within 5	I can fluently add within 5.	Not applicable. See **EE.3.0A.4.**
	I can solve addition word problems.	
0A.5 Subtract fluently within 5	I can fluently subtract within 5.	
	I can solve subtraction word problems.	
Number & Operations in Base Ten (NBT)		
Work with numbers 11-19 to gain foundations for place value (K.NBT.1)		
Standards:	**I Can Statements:**	**Essential Elements:**
NBT.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones using objects or drawings.	I can compose and decompose numbers from 11-19 into ten and ones by using objects or drawings.	Not applicable. See **EE.1.NBT.4 and EE.1.NBT.6.**
NBT.1 Compose and decompose numbers from 11-19 into ten ones and some further ones and record by using a drawing or equation.	I can compose or decompose numbers from 11-19 into ten and ones and record by using a drawing or an equation.	
NBT.1 Understand that the numbers 11-19 are composed of ten ones and one, two, three, four, five, six, seven, eight or nine	I can show my understanding that numbers from 11-19 are composed of ten ones and one, two, three, four,	

ones.	five, six, seven, eight, or nine ones.	
Measurement and Data (MD)		
Describe and compare measureable attributes (K.MD.1-2)		
Standards:	**I Can Statements:**	**Essential Elements:**
MD.1 Describe measurable attributes of objects, such as length or weight.	I can describe several measurable attributes of a single object.	**EE.K.MD.1-- 3.**Classify objects according to attributes (big/small, heavy/light).
MD.2 Directly compare two objects with a measureable attribute with a measurable attribute in common to see which object has "more of" / "less of" the attribute and describe the difference.	I can describe the measurable attributes of objects. "This rope is longer than that belt."	
	I can compare weights using standard and non-standard math tools.	
	I can compare the lengths of various items and objects.	
Classify objects and count the number of objects in categories (K.MD.3)		
MD.3 Classify objects into given categories.	I can sort and categorize objects based on an attribute and count the number of objects in each category.	**EE.K.MD.1-- 3.** Classify objects according to attributes (big/small, heavy/light).
MD.3 Classify and count the numbers of objects in each category and organize the groups by quantity in each group.	I can create a graph and talk about the data from the graph with a peer group.	
Geometry (G)		
Identify and describe shapes. (K.G.1-3)		

Standards:	I Can Statements:	Essential Elements:
G.1 Describe objects in the environment using names of shapes.	I can describe objects in the environment using names of shapes.	Not applicable. See **EE.1.G.a.**
G.1 Describe the relative positions of objects using terms such as above, below, beside, in front of, behind and next to.	I can describe the positions of these objects in the environment using terms like above, below, beside, in front of, behind, and next to.	
G.2 Name shapes correctly.	I can identify 2D and 3D shapes by name regardless of their orientation or size. (G.4.1)	**EE.K.G.2-3. Match shapes of same size and orientation (circle, square, rectangle, triangle).**
G.3 Identify two-dimensional or three-dimensional shapes.	I can identify shapes as 2D (two dimensional, "flat") or 3D (three dimensional, "solid").	
Analyze, compare, create, and compose shapes (K.G.4-6)		
G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts and other attributes.	I can analyze and compare two- and three dimensional shapes using language to describe their similarities, differences, parts and other attributes.	Not applicable. See **EE.7.G.1.**
G.5 Model real life shapes in the world by building shapes from components and drawing shapes.	I can model shapes in the world using a variety of media and by drawing.	Not applicable.
G.6 Compose simple shapes to form larger shapes.	I can compose simple shapes to form larger shapes.	Not applicable. See **EE.1.G.3.**

Resources
Dreambox dreambox.com Dreambox is an online learning system. It uses adaptive questioning to determine and deliver the right lesson at the right time to personalize to the individual student. All domains and standards are addressed through this online learning system. Use in Grades K-5 as an intervention or enrichment tool. **Front Row frontrowed.com** Front row is an online learning system. It uses adaptive questioning to determine and deliver the right lesson at the right time to personalize to the individual student. All domains and standards are addressed through this online learning system. Use in Grades K-5 as an intervention or enrichment tool. **Everyday Math Resources** *Everyday Mathematics* is a comprehensive Pre-K through Grade 6 mathematics program engineered for the Common Core State Standards.Developed by The University of Chicago, School Mathematics Project, the *Everyday Mathematics* spiral curriculum continually reinforces abstract math concepts through concrete real-world applications. **Kathy Richardson** Developing Number Concepts (Counting, Comparing and Pattern) Developing Number Concepts (Addition and Subtraction) These books present a complete number curriculum for kindergarten through third grade classrooms. They are clearly written and each book provides simple but meaningful activities which give students repeated math experiences. These books present an approach based on years of research by the author on how children learn. They are a must for K-3 teachers of mathematics to meet the needs of all their students. Each chapter of each book includes: • What you need to know about.... • Chapter Overview • Goals for Children's Learning • Analyzing and Assessing Children's Needs • Classroom Scenes • About the Activities • Teacher Directed Activities • Independent Activities

- Blackline Masters

Fosnot Units
In *Bunk Beds and Apple Boxes* children learn about compensation and equivalence within the context of a pajama party during which eight excitable girls confound their babysitter by continually changing places on their bunk bed and also in a grocery store where a grocer arranges apples in different-sized trays. The arithmetic rack is introduced as a model for exploring part-whole relations.

In Beads and Shoes, Making Twos uses the context of walking hand in hand in two lines to explore doubles and even or odd numbers. A story about designing necklace patterns using two colors of beads creates a context for exploring the relationship between doubles and skip-counting and invites students to work with groups as units.

The Double-Decker Bus, the story of a little girl's efforts to count the passengers on fast-moving double-decker buses, introduces students to the benefits of using the five-structure to quickly calculate quantities. The arithmetic rack, whose beads mirror the organization of seats on the buses, provides a model for solving addition and subtraction problems.

In *Organizing and Collecting* the hopelessly disorganized Masloppy family's efforts to keep track of their things create a context for investigating place value patterns and efficient ways to count with five- and ten-structures. As the unit progresses, children develop place value and addition strategies.

Fundamentals Books (James Burnett)
This series provides mathematical number games for Grades K-6 that develop students' ability to calculate mentally. Games also improve problem-solving abilities, encourage appropriate mathematical language, increase social interaction, and promote self-esteem.

Box of Facts (James Burnett)
Box of Facts is designed to develop math fact efficiency, accuracy, flexibility, and automaticity with understanding. *Box of Facts* focuses on visual models and activities for introducing, reinforcing, practicing, and extending the basic number-fact strategies.

Websites
http://www.k-5mathteachingresources.com/
https://illuminations.nctm.org/