

Math Curriculum Summary 2020
4 Year-Old Kindergarten ~ Edgar Elementary School

Attached you will find our updated math curriculum map for the Early Childhood and 4 Year-Old Kindergarten Students. This latest curriculum map is a culmination of two years of planning and curriculum development.

The foundation of this curriculum map is based on our curriculum, "Big Day for Pre-K" and also the math principals of The Math Institute. This map encompasses monthly math concepts that correlate to our major curriculum themes. Our current curriculum maps have two components. One part of our curriculum map covers the subject areas of English-Language Arts, Science and Social Studies. The second part of our curriculum map is math only. With our recent math updating, we feel that our math curriculum now can be an additional map.

The five guiding principles of our new math curriculum are:

- Students will know the number name and the count sequence.
- Students can count to tell the numbers of objects.
- Students will compare numbers.
- Students will understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.
- Students will work with numbers 11-19 to gain foundations for place value.

Additional supporting work includes:

- Students classify objects and count the number of objects in a category.
- Students analyze, compare, create and compose shapes.
- Students describe and compare measurable attributes.
- Students identify and describe shapes.

Monthly curriculum themes that correlate to these math concepts are: Ready for School, My Family, Our Community, Awesome Animals, Imagine It and Make It, Growing Up Healthy, Nature All Around Us and "Moving On".

We feel confident in our curriculum that young students will learn the important concepts in all subject areas as well as becoming independent learners while having fun!

Submitted by:

Mari Faber, Early Childhood and 4 Year-Old Kindergarten Teacher
Kristin Bornbach, 4 Year-Old Kindergarten Teacher
Edgar Elementary School

Kindergarten Math Overview

In kindergarten, instructional time focuses on two critical areas. The first area is representing, relating, and operating on whole numbers, initially with sets of objects. The second area is describing shapes and space.

In addition to the focus areas, the kindergarten students will gain knowledge in concept of numbers, practice simple addition and subtraction facts, name and recognize basic shapes, and learn about basic measurement units.

Unit 1: Understand Numbers 1-10

- Count 1-10 objects
- Identify and order numbers 1-10
- Write numerals 1-5

Unit 2: Explore 5-Groups

- Write numerals 1-10
- See and make numbers in 5-Groups
- Identify and continue a pattern
- Story problems

Unit 3: Teen Numbers as Tens and Ones

- Write numerals 1-20
- Partners through 6
- Attributes
- Teen Numbers as Tens and Ones
- Use = and not = and pose and solve addition and subtraction problems

Units 4: Partners, Problem Drawings, and Tens

- Write numerals 1-30
- Makes simple math drawing
- Solve addition equations
- Partners of 10

Unit 5: Consolidation of Concepts

- Represent teen numbers as a ten and extra ones with objects and equations
- Write equations to show partners of ten
- Write and solve addition and subtraction problems with numbers 1-5

First Grade Math Overview

The first grade Math curriculum is aligned with the Wisconsin State Common Core Standards. We will continue to use the 2018 Math Expressions Common Core by Dr. Karen C. Fuson, which includes 8 units. Math Expressions incorporates traditional and new strategies for math concepts and problem solving. This program promotes children's natural solution methods and introduces effective procedures. In the whole group instruction students are in mixed ability sections; however, they will be in differentiated groups within their sections during guided math to meet each students' needs. Our curriculum includes a variety of math tools, technology, math games, partner activities, small group activities, and independent work. Students will participate in 1st grade mathematics for 60 minutes each day.

The eight units for first grade include:

Unit 1: Partners and Number Patterns Through 10

Numbers 1-10

Visualize numbers as 5-groups and ones

Patterns with partners through 10

Unit 2: Addition and Subtraction Strategies

Represent addition situations

Use circle drawings to represent equations and stories

Explore solution methods

Solve Subtraction equations with circle drawings

Relate addition and subtraction

Unit 3: Unknown Numbers in Addition and Subtraction

Explore Unknowns

Solve equations with unknown partners

Use subtraction strategies to find unknown partners

Solve written subtraction stories

Relate addition and subtraction situations

Solve mixed problems

Unit 4: Place Value Concepts

Meaning and use of ten groups

Explore teen numbers

Represent and compare teen numbers

Visualize teen addition

Teen addition strategies

Investigate doubles

Understand and integrate tens and ones

Grouping ones into tens

Add with groups of ten

Compare numbers

Add tens or ones

Add 2-digit numbers by counting on

Unit 5: Place Value Situations

Make a ten strategy
Story problems within 20
Decompose numbers to subtract
Create and solve story problems
Solve problems with 3 addends
Count groups of 10s
Add and subtract multiples of 10

Unit 6: Represent and Compare Data

Organize and represent data
Interpret data with 3 categories
Collect data with 3 categories
Introduce and use comparison bar

Unit 7: Geometry, Measurement, and Equal Shares

Analog and digital clocks
Tell, write and show time to the hour and half-hour
Identify and show equal shares
Compose and identify 2-D and 3-D shapes
Compare and order objects by length
Measurement with length units

Unit 8: Two – Digit Addition

Add 2-digit number to a 1-digit number
Add 2-digit number to a multiple of ten
Add two 2-digit numbers

2nd Grade Math Curriculum Overview

Unit 1- Addition and Subtraction Within 20-Children work toward building fluency with addition and subtraction within 20 as well as using math practices to solve a variety of addition and subtraction word problems.

ESSENTIAL STANDARDS THAT ARE BEING ASSESSED:

- 2.OA.A-Represent and solve problems involving addition and subtraction
- 2.OA.B- Add and subtract within 20

Students can:

- become fluent in single-digit additions and the related subtractions using a variety of mental strategies
- use all addition and subtraction to solve one-step and two-step problems

Unit 2-Addition Within 200-Children work with place value, representing numbers in different ways, and comparing numbers. They will use their place value understanding and properties of operations to add and subtract.

ESSENTIAL STANDARDS THAT ARE BEING ASSESSED:

- 2.NBT.A-Understand place value
- 2.NBT.B-Use place value understanding and properties of operations to add and subtract

Students can:

- extend base-ten understanding to hundreds
- compute sums within 1000 using place value and the commutative and associative properties of addition
- become fluent with addition within 100

UNIT: 3 - Length and Shapes-Children learn to measure and estimate lengths, relate addition and subtraction to length, represent lengths on line plots, and reason with shapes and their attributes.

ESSENTIAL STANDARDS THAT ARE BEING ASSESSED:

- 2.MD.A-Measure and estimate lengths in standard units

Students can:

- use rulers to measure lengths to the nearest whole-number unit
- build line plots to display measurement data
- recognize and draw shapes with specific attributes

UNIT: 4 - Subtract 2-Digit Numbers- Children work toward building fluency with money and subtraction and utilizing all addition and subtraction word problem subtypes.

ESSENTIAL STANDARDS THAT ARE BEING ASSESSED:

- 2.NBT.B-Use place value understanding and properties of operations to add and subtract

3rd Grade Math Curriculum Overview -2020-2021

Unit 1: Multiplication and Division with 0-5, 9, and 10

Essential Standards:

3.OA.A - Represent and solve problems involving multiplication and division

3.OA.B Understand properties of multiplication and the relationship between multiplication and division.

3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic

3.MD.C. Geometric measurement: understand concepts of area and relate to multiplication and to addition. (Assessed after Unit 2 Lesson 2)

I Can Statements:

- use multiplication and drawings to represent equal groups
- use arrays and Commutative Property of Multiplication
- relate division to multiplication with unknown factors
- explore patterns in 10s, 4s, 2s, 3s, 9s, and 5s count-bys, multiplication and division
- look for patterns with 3s and find products for multipliers greater than 5
- use the area model for multiplication
- build fluency with 2s, 3s, 4s, 5s, 9s, and 10s multiplication and division
- use multiplication and division properties and rules with 1s and 0s
- identify, solve, and create multiplication and division word problems
- solve real world problems with multiplication and division

Unit 2: Multiplication and Division with 6s, 7s, 8s and multiplying with multiples of 10

Essential Standards:

3.OA.A Represent and solve problems involving multiplication and division.

3.OA.B Understand properties of multiplication and the relationship between multiplication and division.

3.OA.C Multiply and divide within 100.

3.MD.C Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

I Can Statements:

- use strategies for multiplying and dividing by 6,, 7, and 8.
- use strategies for solving real world problems.
- write, and solve multiplication and division word problems
- identify and describe square numbers
- build fluency with 0s-10s, multiplication and division
- represent and solve word problems using the four operations
- develop and use strategies for solving two-step problems
- develop strategies for multiplying a 1-digit number by multiples of 10
- use strategies to multiply and divide within 100

Unit 3: Multidigit Addition and Subtraction

Essential Standards:

3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic.

I Can Statements:

- make and interpret place value drawings
- Identify the value of a digit
- use the understanding of place value to group and ungroup multi digit numbers and solve word problems

- identify numbers from scrambled place value names and solve word problems
- round numbers to the nearest hundred and estimate sums and difference
- round numbers to the nearest ten to estimate sums and differences
- discuss multidigit addition methods and relate addition to some subtraction methods
- discuss when to regroup in addition and use addition and multiplication to solve word problems
- identify and explain errors in addition
- explore methods for subtracting multi digit numbers
- subtract across zeros
- subtract using two different methods
- relate grouping in addition and ungrouping in subtraction
- practice and discuss addition and subtraction methods
- use strategies to solve multistep word problems

Unit 4: Fractions, Time, and Data

Essential Standards:

3.NF.A Develop Understanding of fractions as numbers.

3.MD.A Solve Problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

I Can Statements:

- develop a conceptual understanding of unit fractions and how they are used to build other fractions.
- utilize fraction bars and number lines to represent fractions.
- locate fractions on the number line.
- use fraction bars and number lines to compare unit fractions.
- compare fractions with the same denominator or numerator.
- measure length in inches, half inches, and quarter inches with rulers.
- tell and write time to the minute, quarter hour, half hour, and hour.
- tell and write time before and after the hour to the nearest minute in different ways.
- find elapsed time in hours and minutes.
- solve word problems involving addition and subtraction of time intervals in minutes.
- represent data and solve comparison problems using pictographs and bar graphs.

- construct and analyze frequency tables and line plots.
- solve word problems using data in line plots and scaled bar graphs.

Unit 5: Measurement and Fractions

Essential Standards:

3.MD.C-Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

3.NF.A-Develop understanding of fractions as numbers.

I Can Statements:

- learn to recognize and find perimeter and area.
- write equations to find areas of rectangles, and use given perimeters or areas to find unknown side lengths.
- learn that rectangles with the same perimeter can have different areas, and rectangles with the same area can have different perimeters.
- find area by decomposing figures into rectangles.
- solve puzzles and find area using tangram shapes.
- learn the meaning of equivalent fractions and how to find them.
- use number lines to find two or more equivalent fractions.
- use fraction concepts to solve real world problems.

Unit 6: Write Equations to Solve Word Problems

Essential Standards:

3.OA.A - Represent and solve problems involving multiplication and division

3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic

I Can Statements:

- solve addition and subtraction problems.
- represent and solve word problems with unknown addends and unknown factors.

- solve word problems with unknown starts and write situations and solution equations.
- recognize, model, and solve comparison word problems.
- represent and solve comparison problems with misleading language.
- recognize and solve word problems with extra, hidden, or not enough information.
- solve two-step word problems using the four operations.
- decide if answers are reasonable.

Unit 7: Measurement and Polygons

Essential Standards:

3.MD.A-Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

I Can Statements:

- use customary units of volume.
- use metric units of liquid volume.
- measure and estimate weight and mass.
- solve word problems involving liquid volumes or masses using the four operations.
- classify triangles according to their angle sizes and side lengths.
- build and name polygons
- learn about relationships among different types of quadrilaterals.
- describe, sort, and draw quadrilaterals according to their attributes.

Fourth Grade Math Curriculum Overview

COURSE DESCRIPTION:

Fourth Grade students will participate in Math/Number talks focusing on the ability to have meaningful math discussions that promote problem solving and reasoning skills. Students will develop the ability to pose purposeful questions, building conceptual understanding and fluency skills in math. Students will use mathematical representations; physical, contextual, visual, symbolic and verbal to connect mathematical concepts and develop a deeper understanding of numbers. Standards in fourth grade will focus on using the four operations with whole numbers to solve problems, within the Operations and Algebraic Thinking standards. Students will fluently add and subtract multi-digit whole numbers. Within Number and Operations in Base Ten standards, students will generalize place value understanding for multi-digit whole numbers. Also students will use place value understanding and properties of operations to perform multi-digit arithmetic. Number and Operations Fractions standard will include the ability of students to extend understanding of fraction equivalence and ordering. They will build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Students will understand decimal notation for fractions, and compare decimal fractions.

The eight units of fourth grade include:

Unit 1: Place Value and Multidigit Addition and Subtraction

- Place Value to One Million
- Addition with Greater Numbers
- Subtraction with Greater Numbers

Unit 2: Multiplication with Whole Numbers

- Multiplication with Tens and Hundreds
- Multiply by One-Digit Numbers
- Multiplication with Two-Digit Numbers
- Multiplication with Thousands

Unit 3: Division with Whole Numbers

- Dividing Whole Numbers
- Division Issues and Word Problems

Unit 4: Equations and Word Problems

- Reasoning and Solving Problems
- Comparison Word Problems
- Problems with More Than One Step
- Analyzing Patterns

Unit 5: Measurement

- Converting Measurements
- Perimeter and Area

Unit 6: Fraction Concepts and Operations

- Fractions with Like Denominators
- Mixed Numbers with Like Denominators
- Multiply Fractions and Whole Numbers

Unit 7: Fractions and Decimals

- Comparing Fractions
- Equivalent Fractions
- Understanding Decimals

Unit 8: Geometry

- Measuring and Drawing Angles
- Triangles and Angle Measurements
- Analyzing Quadrilaterals
- Analyzing Polygons

5th Grade Math Curriculum Map

COURSE DESCRIPTION:

The fifth grade students will be participating in numerous mathematical activities to help gain a greater understanding and depth to their learning of the major, supporting, and additional standards. Each lesson will start out with "number talks" and or Daily Oral Math activities to preview the topic of the day. Each lesson will cover the main idea, practice problems that relate, and an opportunity to apply what was learned on their homework. Throughout each lesson and every unit, the students will focus on 5 mathematical representations; physical, contextual, visual, symbolic, and verbal. By using the representations throughout each unit and lesson, it will help the students gain a greater depth in their knowledge and understanding. The major cluster standards for 5th grade will focus on the four operations, fractions, place values, and geometric measurement. The supporting and additional cluster standards will preview and review measurement conversion, interpreting data, writing numerical expressions, analyze patterns and relationships, working with graph points, coordinate planes, and classifying two-dimensional figures. With this map and our unit arrangement, we will be able to complete each of the major, supporting, and additional standards by the end of the school year. We believe our students will have a greater understanding and depth of knowledge in Math which will give them greater success in 6th grade and years to come.

COURSE OVERVIEW LISTING ALL UNITS BEING COVERED: Units 1 through 8

Unit 1: Addition and Subtraction with Fractions

Unit 2: Read and Write Whole Numbers and Decimals

Unit 3: Multiplication and Division with Fractions

Unit 4: Multiplication with Whole Numbers and Decimals

Unit 5: Division with Whole Numbers and Decimals

Unit 6: Operations and Word Patterns

Unit 7: Algebra, Patterns, and Coordinate Graphs

Unit 8: Measurement and Geometry

6th Grade Math Overview

The focus of 6th grade mathematics is developing a solid foundation in ratios and equations to be successful in High School Algebra. This includes calculating unit rate, using variables in expressions, and solving one step equations. Other topics of importance are fraction and decimal computations, geometry (area, surface area, and volume), understanding negative numbers, and statistical calculations (mean, median, mean absolute deviation, and interquartile range) and displays (dot plot, histogram, box plot). Throughout the class students work on thinking, working, and speaking like a mathematician. Students construct viable arguments for their math thinking and critique the reasoning of others (MP3). Students will work to make sense of problems and persevere in solving problems (MP1).

Course Units:

- Unit 1: Area and Surface Area
- Unit 2: Introducing Ratios
- Unit 3: Unit Rates and Percentages
- Unit 4: Dividing Fractions
- Unit 5: Arithmetic in Base Ten
- Unit 6: Expressions and Equations
- Unit 7: Rational Numbers
- Unit 8: Data Sets and Distributions
- Unit 9: Putting It All Together

7th Grade Math Overview

The focus of seventh grade mathematics is developing an understanding of proportional relationships, operations with rational numbers, and solving equations to be successful in High School Algebra. Other topics of importance are area and circumference of circles, volume and surface area of three-dimensional objects, comparing two data sets, and probability. Throughout the class students work on thinking, working, and speaking like a mathematician. Students construct viable arguments for their math thinking and critique the reasoning of others (MP3) during partner talks and class discussions. Students will work to make sense of problems and persevere in solving problems (MP1).

Course Units:

- Unit 1: Scale Drawings
- Unit 2: Introducing Proportional Relationships
- Unit 3: Measuring Circles
- Unit 4: Proportional Relationships and Percentages
- Unit 5: Rational Number Arithmetic
- Unit 6: Expressions, Equations, and Inequalities
- Unit 7: Angles, Triangles, and Prisms
- Unit 8: Probability and Sampling
- Unit 9: Putting It All Together

8th Grade Overview

Students begin grade 8 with transformational geometry. They study rigid transformations and congruence, then dilations and similarity (this provides background for understanding the slope of a line in the coordinate plane). Next, they build on their understanding of proportional relationships from grade 7 to study linear relationships. They express linear relationships using equations, tables, and graphs, and make connections across these representations. They expand their ability to work with linear equations in one and two variables. Building on their understanding of a solution to an equation in one or two variables, they understand what is meant by a solution to a system of equations in two variables. They learn that linear relationships are an example of a special kind of relationship called a function. They apply their understanding of linear relationships and functions to contexts involving data with variability. They extend the definition of exponents to include all integers, and in the process codify the properties of exponents. They learn about orders of magnitude and scientific notation in order to represent and compute with very large and very small quantities. They encounter irrational numbers for the first time and informally extend the rational number system to the real number system, motivated by their work with the Pythagorean Theorem.

Unit One: Rigid Transformations and Congruence

Unit Two: Dilations, Similarity, and Introducing Slope

Unit Three: Linear Relationships

Unit Four: Linear Equations and Linear Systems

Unit Five: Functions and Volume

Unit Six: Associations in Data

Unit Seven: Exponents and Scientific Notation

Unit Eight: Pythagorean Theorem and Irrational Numbers

Unit Nine: Putting it all Together

Algebra 1 Overview

A basic high school math course that is a prerequisite for most high school math and science courses. Algebra I is also beneficial for those who plan to go on to school after high school. This course will concentrate on one and two-variable statistics, linear equations, functions, and quadratic equations. Students will be expected to use math practices as they work both collaboratively and individually.

Unit 1: One-variable statistics

Unit 2: Linear equations, inequalities, and systems

Unit 3: Two variable statistics

Unit 4: Functions

Unit 5: Introduction to exponential functions

Unit 6: Introduction to quadratic functions

Unit 7: Quadratic equations

Course Overview: Geometry

This is a course of mathematics of lines, points, planes, polygons and circles. Geometry involves a lot of reasoning and thus is highly recommended or required for many lines of work you may choose for your future. Reasoning inductively will also help develop conjectures for the various properties we will learn.

Units covered in this class.

Unit 1: Constructions and rigid transformations

Unit 2: Congruence

Unit 3: Similarity

Unit 4: Right triangle trigonometry

Unit 5: Solid geometry

Unit 6: Coordinate geometry

Unit 7: Circles

Unit 8: Conditional probability

Course Overview: Algebra 2

This course furthers the studies of Algebra I and also includes functions, irrational numbers, higher degree equations and linear systems of equations.

Units covered in this class.

Unit 1: Sequences and Functions

Unit 2: Polynomials and Rational Functions

Unit 3: Complex Numbers and Rational Exponents

Unit 4: Exponential Functions and Equations

Unit 5: Transformations of Functions

Unit 6: Trigonometric Functions

Unit 7: Statistical Inferences

Course Overview: Precalculus

This course is an NTC dual credit course that meets all of the standards for a common core 4th year high school math course, and includes an introduction to calculus with functions, graphs, limits, area under a curve, and rates of change. The course is well balanced among procedural fluency, deep conceptual understanding, strategic competence, and adaptive reasoning. The course embeds the CCSS standards for mathematical practice as an integral part of each lesson in the course. The curriculum contains several key labs and hands-on activities throughout the course to introduce and connect concepts, with an emphasis on modeling.

Units covered in this class.

- Unit 1: Preparing for Your Journey
- Unit 2: Functions and Trigonometry
- Unit 3: Algebra and Area Under a Curve
- Unit 4: Polynomial and Rational Functions
- Unit 5: Exponentials and Logarithms
- Unit 6: Triangles and Vectors
- Unit 7: Limits and Rates
- Unit 8: Extending Periodic Functions
- Unit 9: Matrices
- Unit 10: Conics and Parametric Functions
- Unit 11: Polar Functions and Complex Numbers
- Unit 12: Series and Statistics
- Unit 13: Precalculus Finale

Course Overview: Statistics

This course is an NTC dual credit course. It teaches introductory statistical methods including descriptive and inferential statistics, probability, estimation, hypothesis testing, and linear regression.

Units covered in this class.

Unit 1: The Nature of Statistics

Unit 2: Organizing Data

Unit 3: Descriptive Measures

Unit 6: The Normal Distribution

Unit 7: The Sampling Distribution of the Sample Mean

Unit 8: Confidence Intervals for One Population Mean

Unit 9: Hypothesis Tests for One Population Mean

Unit 10: Inferences for Two Population Means

Unit 13: Chi-Squared Procedures

Unit 14: Descriptive Methods in Regression and Correlation

Unit 16: Analysis of Variance (ANOVA)

Course Overview: Calculus

This course covers all content required for an AP Calculus course and is an NTC dual credit course. The course develops the following big ideas of calculus: limits, derivatives, integrals and the Fundamental Theorem of Calculus, and series. Each chapter reviews the concepts developed previously and builds on them. The curriculum contains several key labs and hands-on activities to introduce concepts. It also explores derivatives and integrals simultaneously during the first four chapters and both are presented geometrically and in context.

Units covered in this class.

Unit 1: A Beginning Look at Calculus

Unit 2: Rates, Sums, Limits, and Continuity

Unit 3: Slope and Curve Analysis

Unit 4: The Fundamental Theorem of Calculus

Unit 5: Derivative Tools and Applications

Unit 6: More Tools and Theorems

Unit 7: Related Rates and Integration Tools

Unit 8: Volume