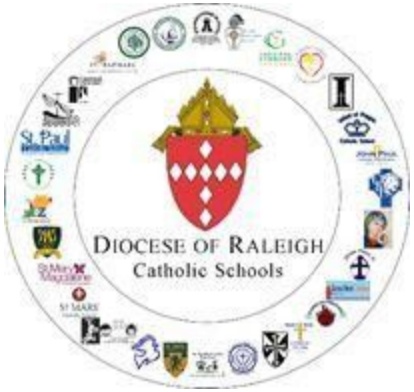

Diocese of Raleigh
Catholic Schools
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K-8 Math Standards
Diocese of Raleigh

May 2018

THE DIOCESE OF RALEIGH SCHOOLS:
MISSION OF OUR CATHOLIC SCHOOLS

The mission of the Diocese of Raleigh is to engage our school/preschool communities in creating a quality education within a Catholic environment that fosters the current and future development of the whole child.

DIOCESE OF RALEIGH CATHOLIC SCHOOLS: A FOUNDATION FOR LIFE

"School is one of the educational environments where one grows by learning how to live, how to become grown- up, mature men and women...Following what St. Ignatius teaches us, the main element in school is learning to be magnanimous...This means having a big heart, having a greatness of soul. It means having grand ideals, the desire to achieve great things in response to what God asks of us and, precisely because of this, doing everyday things, all our daily actions, commitments, and meetings with people well. [It means] doing the little everyday things with a big heart that is open to God and to others." Pope Francis *{Excerpts from Pope Francis: Speech address on June 7, 2013 on the importance of Catholic education in schools in Italy and Albania in the Paul VI Audience Hall.}*

Math
Philosophy

Mathematics reflects the order and unity in God's universe. Our society depends upon the use of Science, Technology, Religion, Engineering, Art and Math. It relies upon a mathematical knowledge which assists students in developing the ability to reason, think critically, and logically. All students will develop practical tools for daily living and the ability to discover creative ways to solve problems.

PREFACE

These guidelines contain four levels of standards:

Kindergarten - Grade 2

Grade 3 - Grade 4

Grade 5 - Grade 6

Grade 7 - Grade 8

Standards for Mathematical Practice

1. Analyze problems critically and persevere in solving them.	**5. Use both tactile and technological tools appropriately.**
2. Understand relationships between real-life situations and mathematical symbols.	**6. Attend to detail and precision.**
3. Construct viable arguments and critique the reasoning of others.	**7. Seek and make use of patterns and repeated reasoning.**
4. Model with mathematics using a variety of methods.	**8. Justify reasoning and solutions.**

INTRODUCTION

The following mathematical standards are intended for use in all Diocese of Raleigh Catholic elementary and middle schools. All students should have the opportunity and the support necessary to learn significant mathematics with depth and understanding whereby ideas are linked to and build on one another so students' understanding and knowledge deepen and their ability to apply mathematics expands. Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well. They must learn mathematics with understanding, actively building new knowledge from experience and previous knowledge. Assessments should support the learning of important mathematics and furnish useful information to both teachers and students.

STRUCTURE

Overarching Standards
Achievement Standards
Grade Level Goals

Overarching Standards

Counting and Cardinality [CC]
Operations and Algebraic Thinking [OA]
Number and Operations in Base Ten [NBT]
Number and Operations - Fractions [NF]
Measurement and Data [MD]
Geometry [G]
Ratio and Proportional Relationships [RP]
The Number System [NS]
Expressions and Equations [EE]
Statistics and probability [SP]
Functions [F]

SAMPLE

Counting and Cardinality — Overarching Standard	
Achievement Standard: K.CC 1 Know number names and the counting sequence. — Achievement Standard	
K.CC 1.1	Know number names and recognize patterns in the counting sequence by: • Counting to 100 by ones. • Counting to 100 by tens. — Goals
K.CC 1.2	Count…….
K.CC 1.3	Write numbers……..

DOR Standards aligned with the North Carolina Standard Course of Study K-8 Mathematics adopted June 2017

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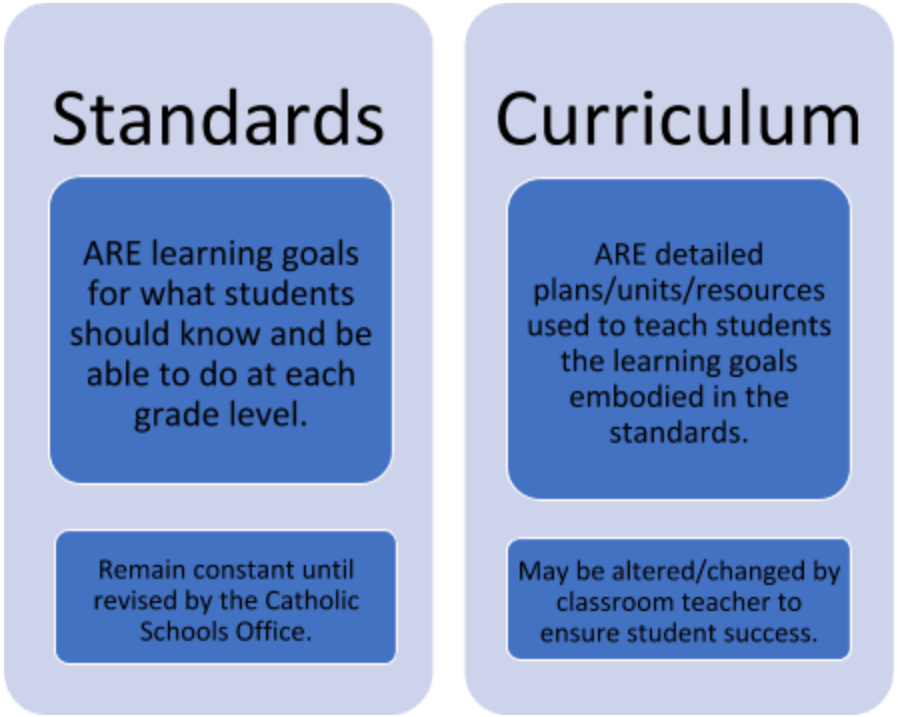
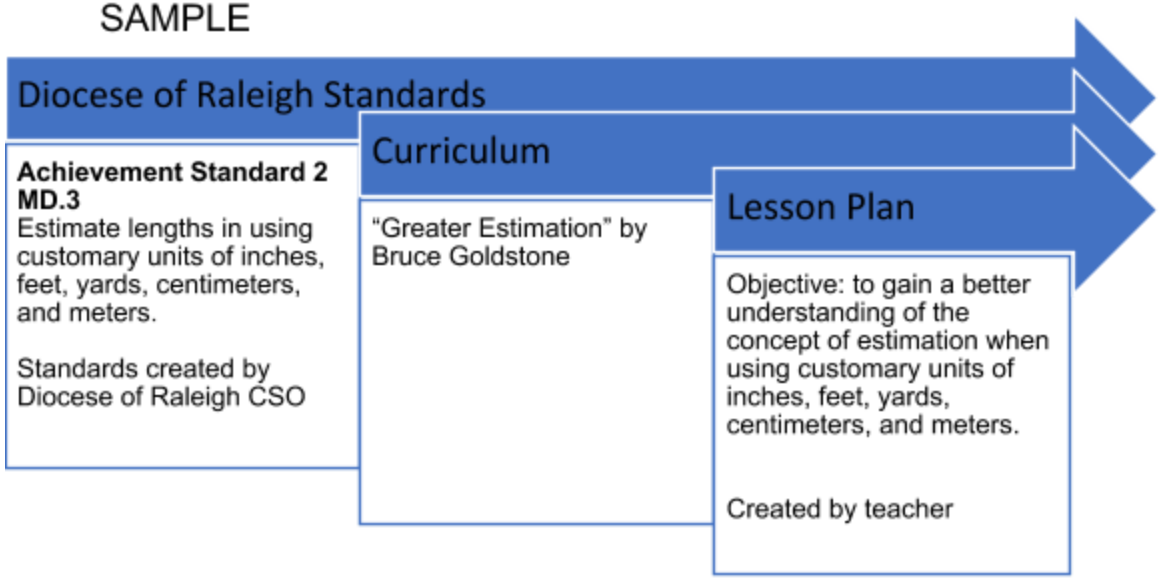

Standards
ARE learning goals for what students should know and be able to do at each grade level.
Remain constant until revised by the Catholic Schools Office.
Curriculum
ARE detailed plans/units/resources used to teach students the learning goals embodied in the standards.
May be altered/changed by classroom teacher to ensure student success.

SAMPLE


Diocese of Raleigh Standards
Curriculum
Lesson Plan
Achievement Standard 2 MD.3
Estimate lengths in using customary units of inches, feet, yards, centimeters, and meters.
Standards created by Diocese of Raleigh CSO
"Greater Estimation" by Bruce Goldstone
Objective: to gain a better understanding of the concept of estimation when using customary units of inches, feet, yards, centimeters, and meters.
Created by teacher

Third Grade

Operations and Algebraic Thinking	
Achievement Standard: 3.OA.1 Represent and solve problems involving addition, subtraction, multiplication and division.	
3.OA.1.1	Fluently add and subtract using three digit whole numbers with and without regrouping using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3.OA.1.2	For products of whole numbers with two factors up to and including 12. ● Interpret and solve products of whole numbers using repeated addition, arrays, and equal groups. ● Solve one-step multiplication word problems using strategies and algorithms .
3.OA.1.3	For quotients of whole numbers with a one-digit divisor and a one-digit quotient: ● Interpret the divisor and quotient in a division equation using subtraction, arrays, and equal groups. ● Solve one-step division word problems using strategies and algorithms .

Achievement Standard: 3.OA.2 Understand properties of multiplication and the relationship between multiplication and division.	
3.OA.2.1	● Introduce commutative, associative, distributive and identity properties of operations as strategies to multiply and divide. ● Understand that addition and subtraction as well as multiplication and division are inverse operations.

Achievement Standard: 3.OA. 3 Multiply and divide within 144.	
3.OA.3.1	Demonstrate fluency of multiplication and division with factors, quotients and divisors up to and including 12. ● Memorize multiplication and division facts with products and quotients through 144. ● Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

Achievement Standard: 3.OA.4 Solve two-step problems.	
3.OA.4.1	● Solve two-step problems involving whole numbers using addition, subtraction, and multiplication ● Use a symbol or letter to represent the unknown number. ● Select appropriate operation to solve simple equations.

Achievement Standard: 3.OA.5 Explore patterns of numbers.	
3.OA.5.1	Identify arithmetic patterns on a multiplication table and explain by using properties of operations.

Number and Operations in Base Ten	
Achievement Standard: 3.NBT.1 Generalize place value understanding for multi-digit numbers.	
3.NBT.1.1	Use place value to round whole numbers to the nearest 10 or 100.
3. NBT.1.2	Use place value to identify numbers to the 100,000 place. ● Read and write whole numbers up to the 100,000 place. ● Use standard, word and expanded forms to represent numbers. ● Compare and order numbers to 100,000.

Achievement Standard: 3.NBT.2 Use place value to perform multi-digit algorithms.	
3.NBT.2.1	Add and subtract whole numbers up to and including 1000. ● Use expanded form to decompose numbers to find sums and differences.
3.NBT.2.2	Multiply a one-digit whole number by a multiple of 10 in the range of 10-90, using concrete and pictorial models.
3.NBT.2.3	Assess the reasonableness of answers using mental computation and estimation strategies.

Number and Operations - Fractions	
Achievement Standard: 3.NF.1 Understand fractions as numbers.	
3.NF.1.1	Understand fractions with denominators of 2,3,4,6, and 8 as quantities formed when a whole is divided into equal parts.
3.NF.1.2	Understand and represent a fraction as a number on a number line.
3.NF.1.3	Explain equivalence of fractions by area and length models. ● Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. ● Recognize and generate simple equivalent fractions using halves, fourths, and eighths; thirds and sixths. ● Explain that a fraction with the same numerator and denominator equal one. ● Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.
3.NF.1.4	Compare two fractions with the same numerator or the same denominator: ● Reason about their size

	● Use area and length models ● Use the >,< and = symbols

Measurement and Data	
Achievement Standard: 3.MD.1 Solve problems involving measurement.	
3.MD.1.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time within the same hour.
3.MD.1.2	Determine the value of sets of coins to $5.00. Estimate and compute the cost of items up to $10. ● Create equivalent amounts of money with different coins. ● Make change up to $10.
3.MD.1.3	Use customary and metric measurement to solve problems. ● Estimate and measure length/distance, in customary and metric units: quarter inch, half-inch, feet and yards, meters (cm, m, km). ● Estimate and measure capacity/volume in customary and metric units: cups, pints, quarts, gallons and, liters (ml, l). ● Estimate and measure weight/mass in customary and metric units: ounces and pounds, grams (g, kg).
3.MD.1.4	Add, subtract, multiply or divide to solve one-step word problems involving measurement of length, capacity and weight.

Achievement Standard: 3.MD.2 Represent and interpret data.	
3.MD.2.1	Draw and interpret picture and bar graphs ● Collect and display data up to four categories using graphs with axes. ● Solve one and two-step word problems using information from graphs.

Achievement Standard: 3.MD.3 Determine probability.	
3.MD.3.1	Conduct and summarize simple probability experiments and their outcome. Use results to predict future outcomes.

Achievement Standard: 3.MD.4 Understand the concept of area.	
3.MD.4.1	Recognize area as an attribute of a plane figure.
3.MD.4.2	Find the area of rectangle with whole numbers by counting unit squares.
3.MD.4.3	Relate area to the operations of multiplication and addition. ● Find the area of a rectangle with whole-number side lengths by tiling, then show the area is the same when multiplying the side lengths. ● Solve real world mathematical problems and represent products of side lengths (area) as square units. ● Use tiles and/or arrays to illustrate and explain that the area of a rectangle can be found by partitioning it into two smaller rectangles, and that the area of the large rectangle is the sum of the two smaller rectangles.

Achievement Standard: 3.MD.5 Understand the concept of perimeter.	
3.MD.5.1	Recognize perimeter as an attribute of a plane figure and distinguish between perimeter and area.
3.MD.5.2	Solve problems involving perimeter of polygons, including finding the perimeter given the side lengths, and finding an unknown side length.

Geometry	
Achievement Standard: 3.G.1 Reason with two and three-dimensional shapes and their attributes.	
3.G.1.1	Identify, describe, classify and compare polygons based on their attributes .
3.G.1.2	Recognize and model examples and non-examples of quadrilaterals including rhombuses, rectangles, squares, parallelograms, and trapezoids.
3.G.1.3	Identify and model symmetry and congruence with concrete materials and drawings.
3.G.1.4	Identify attributes of 3-dimensional solid figures including the faces, edges and vertices of cubes, cylinders, cones, spheres, rectangular and triangular prisms and pyramids.