Diocese of Raleigh
Catholic Schools

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Raleigh, NC 27613

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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.

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
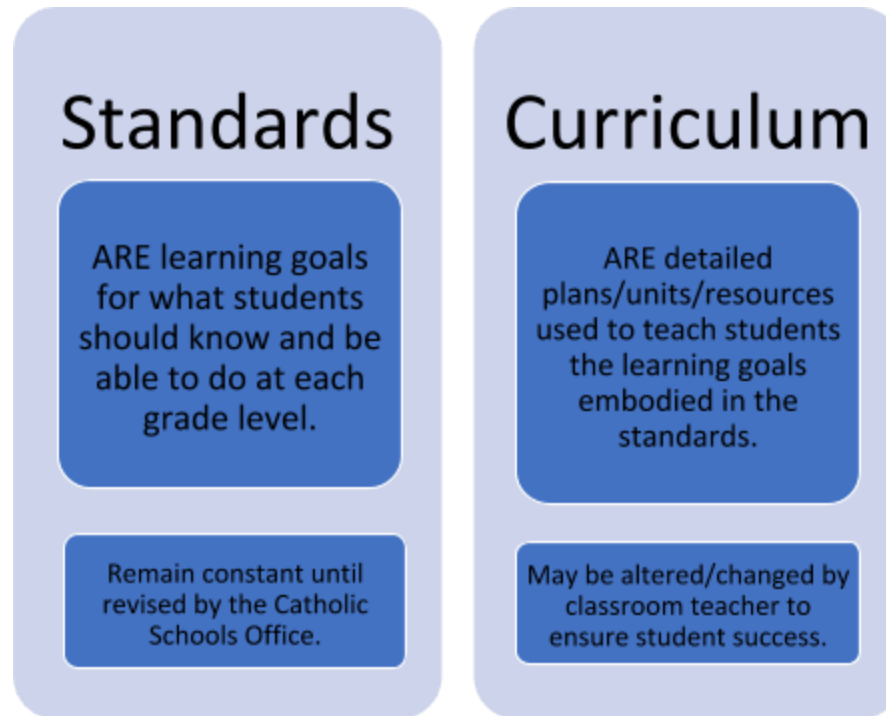### Achievement Standards
Grade Level Goals

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]
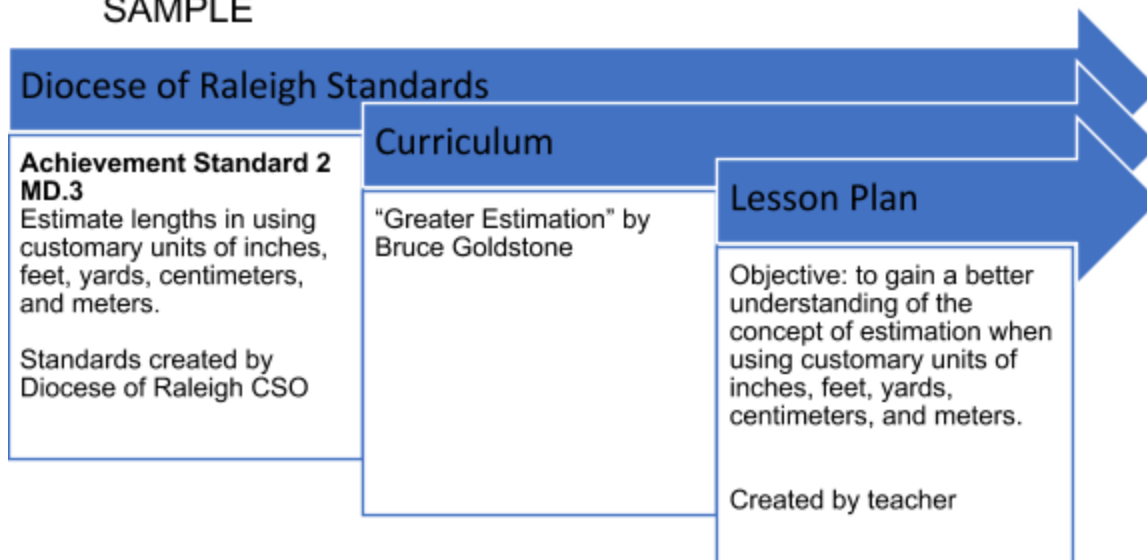
Statistics and probability [SP]

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

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

Curriculum

"Greater Estimation" by Bruce Goldstone

Lesson Plan

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

First Grade

Operations and Algebraic Thinking	
Achievement Standard: 1.OA.1 Represent and solve problems involving addition and subtraction.	
1.OA.1.1	Represent and solve addition and subtraction word problems, within 20, with unknowns, by using objects, illustrations, and equations with a symbol for the unknown number to represent the problem, when solving: • Add to/Take from-Change Unknown • Put together/Take Apart-Addend Unknown • Compare-Difference Unknown
1.OA.1.2	Represent and solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, by using objects, illustrations, and equations with a symbol for the unknown number.

Achievement Standard: 1.OA.2 Understand the relationship between addition and subtraction and apply the properties of operations.	
1.OA.2.1	Apply the commutative and associative properties as strategies for solving addition problems.
1.OA.2.2	Solve an unknown-addend problem, within 20, by using addition strategies and/or changing it to a subtraction problem.

Achievement Standard: 1.OA.3 Add and subtract within 20.	
1.OA.3.1	Demonstrate fluency with addition and subtraction within 10.
1.OA.3.2	Add and subtract, within 20, using strategies such as: • Counting on • Making ten • Decomposing a number leading to a ten • Using the relationship between addition and subtraction • Using a number line • Creating equivalent but simpler or known sums

Achievement Standard: 1.OA.4 Analyze addition and subtraction equations within 20.	
1.OA.4.1	Apply understanding of the equal sign to determine if equations involving addition and subtraction are true.
1.OA.4.2	Determine the unknown whole number in an addition or subtraction equation involving three whole numbers.

Number and Operations in Base Ten	
Achievement Standard: 1.NBT.1 Extend and recognize patterns in the counting sequence.	
1.NBT.1.1	Count to 150, starting at any number less than 150.
1.NBT.1.2	Read and write numerals, and represent a number of objects with a written numeral, to 100 by: • Reading and writing number names zero- ten. • Reading number names to twenty.
1.NBT.1.3	Count within 100; skip-count by 2s, 5s, 10s. • Identify and create number patterns within 100.

Achievement Standard: 1.NBT.2 Understand place value.	
1.NBT.2.1	Understand that the two digits of a two-digit number represent amounts of tens and ones. • Unitize by making a 'ten' from a collection of ten ones. • Model the numbers from 11 to 19 as composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. • Demonstrate that the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens, with 0 ones.
1.NBT.2.2	Compare two two-digit numbers based on the value of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Achievement Standard: 1.NBT.3 Use place value and properties of operations to add and subtract.	
1.NBT.3.1	Using concrete models or illustrations, strategies based on place value, properties of operations, and explaining the reasoning used, add, within 100, in the following situations: • A two-digit number and a one-digit number • A two-digit number and a multiple of 10

1.NBT.3.2	Within 100: given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
1.NBT.3.3	Subtract multiples of 10 in the range 10-100 from multiples of 10 in the range 10-100, explaining the reasoning, using: • Concrete models and illustrations • Number lines • Strategies based on place value • Properties of operations • The relationship between addition and subtraction

Measurement and Data

Achievement Standard: 1.MD.1 Measure lengths.	
1.MD.1.1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
1.MD.1.2	Measure lengths with non-standard and customary units. • Express the length of an object as a whole number of non-standard length units. • Measure by laying multiple copies of a shorter object (the length unit) end to end (iterating) with no gaps or overlaps. • Measure the length of an object as a whole number in inches.

Achievement Standard: 1.MD.2 Build understanding of time and money.	
1.MD.2.1	Tell and write time in hours and half-hours using analog and digital clocks.
1.MD.2.2	Identify and state the value of quarters, dimes, nickels, and pennies and relate each coin to pennies.

Achievement Standard: 1.MD.3 Represent and interpret data.	
1.MD.3.1	Organize, represent, and interpret data with up to three categories. • Ask and answer questions about the total number of data points. • Ask and answer questions about how many in each category. • Ask and answer questions about greater than and less than in one category than in another.

Geometry	
Achievement Standard: 1.G.1 Reason with shapes and their attributes.	
1.G.1.1	Distinguish between defining and non-defining attributes and create shapes with defining attributes by: • Building and illustrating triangles, rectangles, squares, trapezoids, hexagons, circles, and pentagons. • Building cubes, rectangular prisms, cones, spheres, cylinders, and pyramids. • Identifying and creating 'abb' and 'abc' patterns using objects or illustrations.
1.G.1.2	Create composite shapes by: • Making a two-dimensional composite shape using rectangles, squares, trapezoids, triangles, and half-circles naming the components of the new shape. • Making a three-dimensional composite shape using cubes, rectangular prisms, cones, and cylinders, naming the components of the new shape.
1.G.1.3	Partition circles and rectangles into two and four equal parts. • Describe the parts as halves and fourths, as half of and fourth of. • Describe the whole as two parts of, or four parts of the whole. • Explain that decomposing into more equal parts creates smaller parts.