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.

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
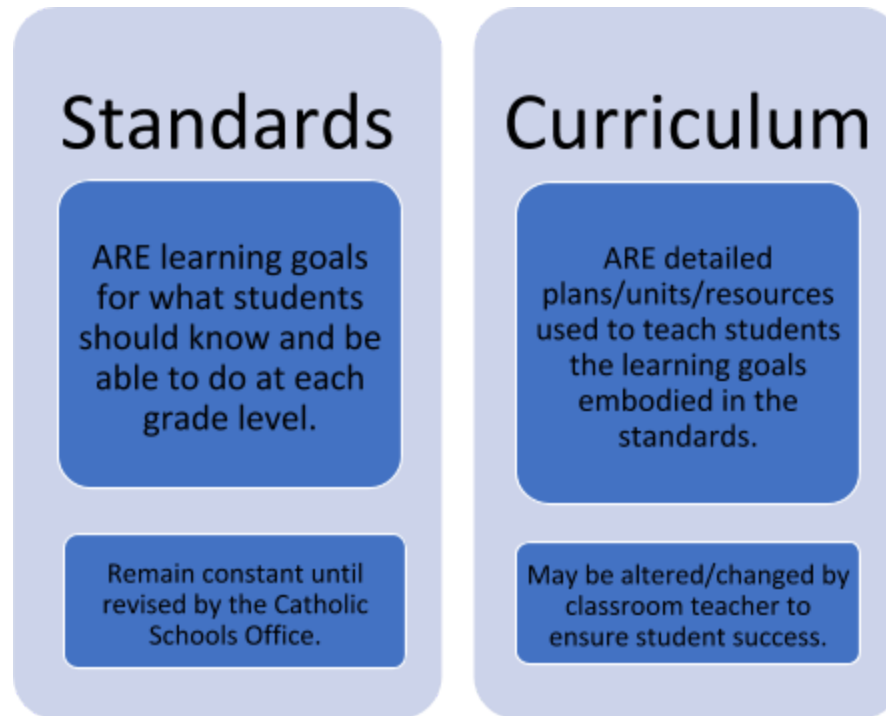Achievement Standards
Grade Level Goals

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]
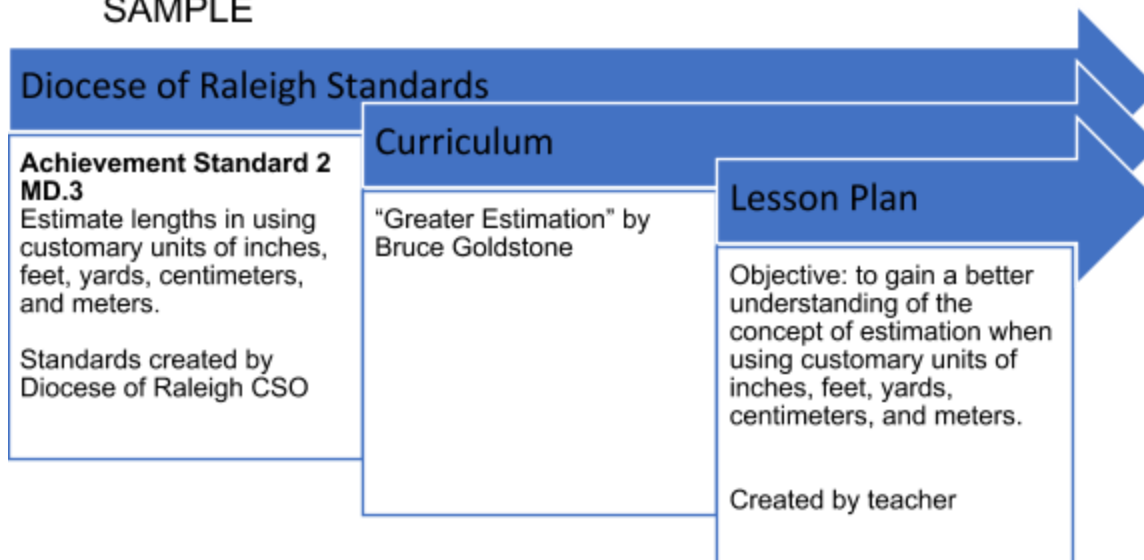Statistics and probability [SP]
Functions [F]

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

Kindergarten

Counting and Cardinality	
Achievement Standard: K.CC.1 Know number names and the counting sequence.	
K.CC.1.1	Know number names and recognize patterns in the counting sequence by: ● Counting to 100 by ones and tens. ● Skip counting by 2's and 5's up to 20. ● Introducing the terms odd and even in relation to skip counting.
K.CC.1.2	Count forward beginning from a given number within the known sequence, instead of having to begin at 1.
K.CC.1.3	Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20, with 0 representing a count of no objects.

Achievement Standard: K.CC.2 Count to tell the number of objects.	
K.CC.2.1	Understand the relationship between numbers and quantities. • When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object (one-to-one correspondence). • Recognize that the last number named tells the number of objects counted regardless of their arrangement (cardinality). • State the number of objects in a group, of up to 5 objects, without counting the objects (perceptual subitizing).
K.CC.2.2	Count to answer "How many?" in the following situations: • Given a number from 1–20, count out that many objects. • Given up to 20 objects, name the next successive number when an object is added, recognizing the quantity is one more/greater. • Given 20 objects placed in a line, a rectangular array, and a circle, identify how many. • Given 10 objects in a scattered arrangement, identify how many.

Achievement Standard: K.CC.3 Compare numbers.	
K.CC.3.1	Identify whether the number of objects, within 10, in one group is greater than, less than, or equal to the number of objects in another group, by using matching and counting strategies.
K.CC.3.2	Compare two numbers, within 10, presented as written numerals using terms greater than, less than, or equal to.

Operations and Algebraic Thinking	
Achievement Standard: K.OA.1 Understand addition and subtraction	
K.OA.1.1	Represent addition and subtraction, within 10: • Use a variety of representations such as objects, fingers, mental images, illustrations, sounds, acting out situations, verbal explanations, or mathematical symbols. • Demonstrate understanding of addition and subtraction by making connections among representations.
K.OA.1.2	Solve addition and subtraction word problems, within 10, using objects or drawings to represent the problem, when solving: • Add to/Take From-Result Unknown. • Put Together/ Take Apart (Total Unknown and Two Addends Unknown).
K.OA.1.3	Decompose numbers less than or equal to 10 into pairs in more than one way using objects or drawings, and record each decomposition by an illustration or expression.
K.OA.1.4	For any number from 0 to 10, find the number that makes 10 when added to the given number using objects or illustrations, and record the answer with an illustration or mathematical symbols.
K.OA.1.5	Recognize and combine groups with totals up to 5 (conceptual subitizing).
K.OA.1.6	Demonstrate fluency with addition and subtraction within 5.

Number and Operations in Base Ten
Achievement Standard: K.NBT.1 Build foundation for place value.

K.NBT.1.1	Compose and decompose numbers from 11 to 19 into ten ones and some further ones by: • Using objects or illustrations. • Recording each composition or decomposition by an illustration or number expression. • Understanding that these numbers are composed of one group of ten, and one, two, three, four, five, six, seven, eight, or nine ones.

Measurement and Data
Achievement Standard: K.MD.1 Describe and compare measurable attributes.

K.MD.1.1	Describe measurable attributes of objects; and describe several different measurable attributes of a single object.
K.MD.1.2	Directly compare two objects with a measurable attribute in common, to see which object is "greater than"/"less than" the attribute, and describe the difference.

Achievement Standard: K.MD.2 Classify objects and count the number of objects in each category.
K.MD.2.1	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.
K.MD.2.2	Identify and state value of penny, nickel, and dime.

Geometry
Achievement Standard: K.G.1 Identify and describe shapes.

K.G.1.1	Describe objects in the environment using names of shapes, and describe the relative positions of objects using positional terms. • Identify and create 'ab' patterns using objects or illustrations.
K.G.1.2	Correctly name squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres regardless of their orientation or overall size.
K.G.1.3	Identify using the correct term for: squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres as two-dimensional (plane) or three-dimensional (solid).

Achievement Standard: K.G.2 Analyze, compare, create, and compose shapes.	
K.G.2.1	Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, attributes, and other properties.
K.G.2.2	Model shapes in the world by: • Finding and locating real world objects: triangles, rectangles, squares, pentagons, and circles. • Illustrating plane shapes, triangles, rectangles, squares, pentagons, circles. • Comparing plane and solid shapes to real world objects.
K.G.2.3	Compose larger shapes from simple shapes. • Build using solid shapes, cubes, cones, spheres, cylinders, and pyramids.